<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071974.1

<400> 95955
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucuccccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu cggccggcug 960

agccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgcgucgg cggccggugc cacccccacg ugaacggggu cuucuucaac 1140

ggcaucaucc uggggcccga cggccacgug cugauccccg aggugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggggacgag gcggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucag cggcguggac cugggccugc cguccugggg gaaguacgug 1380

cucaugagcg ugggcgccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cgcaaggcca acggggccga gacgauccag caccggcugg gcgagaccgg gcgcaagguc 1500

uccgugacca gccaguccgg ccgggugauc agcagcuggg aguccuacaa gagcggcggg 1560

gagaccaagc uguga 1575

<210> 95956
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071975.1

<400> 95956
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccgucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau cauccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu guucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggcgacgag gcggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgccga gacgauccag caccgccugg gggagaccgg ccggaagguc 1500

uccgugacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95957
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071976.1

<400> 95957
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg ucuucaagga cggcgacgag gcggaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgccga gacgauccag caccgccugg gggagaccgg ccggaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95958
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071977.1

<400> 95958
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uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcgcgg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucaccguga gcuccacgua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcaccag cugcgacauc uucacgaacu cccgggggaa gcgcgccagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga ccuccgacga ggcgaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug acgaccaaga gcgucuccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcacgu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugaucccgc ugaugcaccc ccuggcggac 1260

cccuccaccg ucuucaagga cggcgacgag gccgaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgcgga gaccauccag caccgccugg gggagacggg ccggaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95959
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071978.1

<400> 95959
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccgc ugaugcaccc ccuggccgac 1260

cccuccaccg ucuucaagga cggcgacgag gcggaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgccga gacgauccag caccgccugg gggagaccgg ccggaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95960
<211> 1575
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071979.1

<400> 95960
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc ggggaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccgc ugaugcaccc ccuggccgac 1260

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gacguccaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgccga gacgauccag caccgccugg gggagaccgg ccggaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95961
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071980.1

<400> 95961
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gugcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgcgagc 660

aagggcggca agaccugcgg guucguggac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgga gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg ucuucaagga cggcgacgag gcggaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgug 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cggaaggcca acggcgccga gacgauccag caccgccugg gggagaccgg ccggaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95962
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071981.1

<400> 95962
augauccccc aggcccuccu guucgugccg cugcuggucu ucagcuccug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cuggugauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggucuucc ccagcggcaa gcgcuccggg 540

aucacgguga gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcggc ugggcacgag cugcgacauc uucaccaacu cccgcgggaa gcgggcgagc 660

aagggcggca agaccugcgg guucguggac gagcgcggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcguccuc ggccugcggc ugauggacgg gaccugggug 780

gccauccaga cguccgacga ggccaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccgca gcgacgagau cgagcaccug gucguggagg agcuggugaa gaagcgggag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcgucuccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgcgucgg gggccggugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucgugc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggcgacgag gcggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucag cgggguggac cugggccugc cguccugggg caaguacgcc 1380

cucaugagcg ugggggccau gaucgcccug augcugauga ucuuccucau gaccugcugc 1440

cgcaaggcca acggcgcgga gacgaagcag caccggcugg gggagaccgg ccgcaaggug 1500

uccgucacca gccaguccgg gcgcgugauc agcagcuggg aguccuacaa gagcggcggc 1560

gagaccaagc uguga 1575

<210> 95963
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LC071983.1

<400> 95963
augauccccc aggcccuccu guucauccccg cugagcgugu ucucccugug cuucggcaag 60

uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu ggucguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc agcgccauca aggucaacgg guucacgugc 240

accggcgugg ugaccgaggc ggagaccuac acgaacuucg ucggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ugaagaccac caaggagagc cuggucauca ucucccccag cguguccgac 480

cuggacccgu acgacaagag ccuccacucc cgggguguucc ccagcggcaa gugcuccggg 540

aucacgguca gcuccaccua cugccccacc aaccacgacu acaccaucug gaugcccgag 600

agcccgcgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgcgagc 660

aagggcucca agaccugcgg cuucguggac gagcgggggc uguacaagag ccucaagggc 720

gccugcaagc ugaagcugug cggggugcuc ggccugcgcc ugauggacgg caccugggcc 780

gccauccaga cgcccgacga ggucaagugg ugcccgcccg accagcucgu gaacauccac 840

gacuuccggu ccgacgagau cgagcaccug guggucgagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccggcgccug 960

ucccaccucc ggaagcuggu ccccggguuc ggcaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc gugcgcaccu ggaacgagau caucccccucc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggccacguc cugaucccgg agaugcagag cucccuccug 1200

cagcagcaca uggagcugcu cgagagcucc gugauccccc ugaugcaccc ccuggccgac 1260

cccagcaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccg 1320

gacgugcaca agcaggucuc cggcguggac cuggggcugc ccagcugggg caaguacgug 1380

cucauguccg ucggcgccau gaucgcccug augcugauga ucuuccucac cacgugcugc 1440

cggaaggcca acggggccga gagcauccag caccgccggg gcgagaccgg gcgcaaggug 1500

uccgugacca gccagagcgg ccgcgucauc uccagcuggg aguccuacaa gagcgggggc 1560

gagaccaagc uguga 1575

<210> 95964
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645015.1

<400> 95964
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcaggucag cggcguggac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcguccu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95965
<211> 1575

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from
glycoprotein__RABV__LM645016.1

<400> 95965
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugcgcggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcggc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgca gcgacgagau cgagcaccuc guggucgagg agcuggugcg gaagcgcgag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau cauccccagc 1080

aaggggugcc ugcgggguggg cgggcgcugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcggggca accgccccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcggc uguga 1575

<210> 95966
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645018.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucauca cgggcgugcu caucgccaug auccugacca ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95967
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645019.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

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gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95968
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645021.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcagccccg accagcuggu gaaccugcac 840

gacuuccggu ccgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc gugcggaccu ggaacgagau caucccccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccgcacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gugauccccc ucaugcaccc gcuggcggac 1260

cccagcaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucuc cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa gagcaagcag cacucccucg ggggcaucgg gcgcaagguc 1500

agcuccacca gccaguccgg caaggugauc agcagcuggg aguccuacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95969
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645022.1

<400> 95969
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugcggacguc cugcgacauc uucaccaaca gccgcggcaa gcgggccucc 660

aaggggagca agaccugcgg cuucguggac gagcgcggcc ucuacaaguc ccugaagggg 720

gccugcaagc ugaagcucug cggcgugcug gggcugcggc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgca gcgacgagau cgagcaccuc guggucgagg agcuggugcg gaagcgcgag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcucgu ccccggcuuc gggaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau cauccccagc 1080

aagggcugcc ugcgggucgg gggccgcugc cacccccacg ugaacggggu guucuucaac 1140

ggcaucaucc ucggccccga cgggcacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

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gacgugcaca agcagaucag cggggucgac cugggccugc cgaacugggg gaaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

ggccggggga accgccccaa guccaagcag cacagccucg gcgggaucgg ccgcaagguc 1500

uccagcaccu cccagagcgg gaaggugauc uccagcuggg agagcuacaa guccggcggc 1560

gagacccggc uguga 1575

<210> 95970

<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from
glycoprotein__RABV__LM645024.1

<400> 95970
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

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cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

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gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95971
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645026.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95972
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645027.1

<400> 95972
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggccuccu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

uccagcaccu cccagagcgg caaggucauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95973
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645029.1

<400> 95973
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucauc accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95974
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645031.1

<400> 95974
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

cggggcagca agaccugcgg cuucguggac gagcgcgggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcggc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgca gcgacgagau cgagcaccuc guggucgagg agcuggugcg gaagcgcgag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau cauccccagc 1080

aaggggugcc ugcgggguggg cgggcgcugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcggggca accgccccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccggc uguga 1575

<210> 95975
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645034.1

<400> 95975
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95976
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645035.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95977
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645036.1

<400> 95977
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugccugacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ucggcacgag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcucca agaccugcgg cuucguggac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

gcgaugccga cguccgacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccgga gcgacgagau cgagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcccugga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc gugcggaccu ggaacgagau caucccccucc 1080

aaggggugcc uccgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcagag cucccuccug 1200

cagcagcaca uggagcugcu cgagagcucc gugaucccgc ugaugcaccc ccuggcggac 1260

cccagcaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucuc cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcgcggca accggcccaa gagcaagcag cacucccucg ggggcaucgg gcgcaagguc 1500

agcuccaccc cgcagagcgg caaggugauc uccagcuggg aguccuacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95978
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645037.1

<400> 95978
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau cauccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95979
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645039.1

<400> 95979

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cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccu gcccacgccg gacgccugcc gggccgccua caacuggaag 360

auggcggggg acccccgcua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcggaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cucgaccccu acgacaaguc ccugcacagc cgcguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccggc ucggcacguc cugcgacauc uucaccaaca gccgcgggaa gcgggccucc 660

aagggcagca agaccugcgg cuucguggac gagcgcgggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccggc ugauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccgca gcgacgagau cgagcaccug guggucgagg agcuggugcg gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu ccccgggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

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ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccgc ugaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgccccaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95980
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645041.1

<400> 95980
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95981
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645042.1

<400> 95981
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccu gcccacgccg gacgccugcc gggccgccua caacuggaag 360

auggcggggg acccccgcua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcggaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cucgaccccu acgacaaguc ccugcacagc cgcguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccggc ucggcacguc cugcgacauc uucaccaaca gccgcgggaa gcgggccucc 660

aagggcagca agaccugcgg cuucguggac aagcgcgggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccggc ugauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccgca gcgacgagau cgagcaccug guggucgagg agcuggugcg gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugaucccgc ugaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgccccaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95982
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645043.1

<400> 95982
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95983
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645045.1

<400> 95983
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcgggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau cauccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcacuucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcucc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu gaucgccaug auccucacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95984
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645049.1

<400> 95984

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcacuucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcucc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu gaucgccaug auccucacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95985
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645052.1

<400> 95985
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

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gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95986
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645053.1

<400> 95986
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

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gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95987
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LM645056.1

<400> 95987
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau cauccccagc 1080

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ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 95988
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713547.1

<400> 95988
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucgucgac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

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gagugccucg acgcgcugga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagucc guccggacgu ggaacgagau ccugcccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucaucccgc ucgugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca accaggucag cggcguggac cucgggcugc cgaacugggg caaguacgug 1380

cugcucuccg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accggagcga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

uccgugaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95989
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713552.1

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cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucgucgac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

agcaugcaga ccuccaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

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gagugccucg acgcgcugga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagucc guccggacgu ggaacgagau ccugcccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucaucccgc ucgugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca accaggucag cggcguggac cucgggcugc cgaacugggg caaguacgug 1380

cugcucuccg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accggagcga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

uccgugaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95990
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713556.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

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gacuuccggu ccgacgagau cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagagc guccggacgu ggaacgagau ccugcccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gucaucccgc ucgugcaccc ccuggccgac 1260

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cugcucagcg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accgguccga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

agcgugaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95991
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713559.1

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cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucgucgac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

agcaugcaga ccuccaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagucc guccggacgu ggaacgagau ccugcccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucaucccgc ucgugcaccc ccuggccgac 1260

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cugcucuccg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accggagcga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

uccgugaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95992
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713560.1

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cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucguggac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

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gacuuccgga gcgacgagau cgagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcgcugga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagucc gugcggacgu ggaacgagau ccugcccagc 1080

aaggggugcc ugcgcgucgg cgggcggugc cacccccacg ugaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucgugcaccc ccuggccgac 1260

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gacguccaca accaggugag cggcguggac cucgggcugc cgaacugggg caaguacguc 1380

cugcucuccg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguga accggagcga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

uccgucaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95993
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713572.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

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gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagagc gugcggacgu ggaacgagau ccugcccucc 1080

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cugcucagcg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguga accgguccga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

agcgucaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95994
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from

glycoprotein__RABV__LN713578.1

<400> 95994

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uccuacaugg agcugaaggu gggcuacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

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gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guccggacgu ggaacgagau ccuccccucc 1080

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cagcagcaca uggagcuccu ggagagcucc gucaucccgc uggugcaccc ccucgccgac 1260

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agcgugaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95995
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from
glycoprotein__RABV__LN713589.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucguggac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

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cucauggagg ccgacgccca cuacaagucc gugcggacgu ggaacgagau ccugcccagc 1080

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uccgucaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95996
<211> 1575
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713600.1

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cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

uccccgcgcc ucggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucgucgac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

agcaugcaga ccuccaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagucc guccggacgu ggaacgagau ccugcccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucaucccgc ucgugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca accaggucag cggcguggac cucgggcugc cgaacugggg caaguacgug 1380

cugcucuccg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accggagcga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

uccgugaccc cgcagagcgg gaagaucauc uccagcuggg agagccacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 95997
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713602.1

<400> 95997
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcaacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

agcaugcaga ccagcaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccggu ccgacgagau cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagagc guccggacgu ggaacgagau ccugcccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gucaucccgc ucgugcaccc ccuggccgac 1260

cccagcaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca accaggucuc cggcguggac cucgggcugc cgaacugggg caaguacgug 1380

cugcucagcg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguca accgguccga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

agcgugaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95998
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713608.1

<400> 95998
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

agcaugcaga ccagcaacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccggu ccgacgagau cgagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc gugcggacgu ggaacgagau ccuccccucc 1080

aaggggugcc ugcgcgucgg cgggcggugc cacccccacg ugaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggcaacguc cucauccccg agaugcagag cucccugcug 1200

cagcagcaca uggagcuccu ggagagcucc gugaucccgc uggugcaccc ccucgccgac 1260

cccagcaccg ucuucaagga cggggacgag gcggaggacu ucguggaggu gcaccucccc 1320

gacguccaca accaggugug cggcguggac cuggggcucc cgaacugggg caaguacguc 1380

cugcugagcg ccggcgcccu caccgcccug augcugauca ucuuccugau gaccugcugc 1440

cgccgcguga accgguccga gcccacgcag cacaaccucc gcgggaccgg ccgggaggug 1500

agcgucaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 95999
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713628.1

<400> 95999

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cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagucc cucgugauca ucagcccguc cguggcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggucuucc ccagcggcaa gugcuccggg 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

agcaugcaga ccagcaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccggu ccgacgagau cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guccggacgu ggaacgagau ccuccccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggcaacgug cucauccccg agaugcagag cucccugcug 1200

cagcagcaca uggagcuccu ggagagcucc gucaucccgc uggugcaccc ccucgccgac 1260

cccagcaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca accaggucuc cggcguggac cuggggcucc cgaacugggg caaguacgug 1380

cugcugagcg ccggcgcccu caccgcccug augcugauca ucuuccugau gaccugcugc 1440

cgccgcguca accgguccga gcccacgcag cacaaccucc gcgggaccgg ccgggaggug 1500

agcgugaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 96000
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713639.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

agcaugcaga ccagcaacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccggu ccgacgagau ggagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccauccu gaacaagacc 1020

cucauggagg ccgacgccca cuacaagagc gugcggacgu ggaacgagau ccugcccucc 1080

aaggggugcc ugcgcgucgg cgggcggugc cacccccacg ugaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacguc cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gugaucccgc ucgugcaccc ccuggccgac 1260

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gacguccaca accaggugug cggcguggac cucgggcugc cgaacugggg caaguacguc 1380

cugcucagcg ccggcgcccu gaccgcccug augcugauca ucuuccucau gaccugcugc 1440

cgccgcguga accgguccga gcccacgcag cacaaccugc gcgggaccgg ccgggaggug 1500

agcgucaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 96001
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713660.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc agcgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagucc cuccacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ucaagaccac caaggagagc cuggugauca ucuccccgag cguggcggac 480

cucgaccccu acgaccgcuc ccugcacagc cgggucuucc ccuccggcaa gugcagcggg 540

guggccgugu ccagcacgua cugcuccacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ugggcaugag cugcgacauc uucaccaacu cccgggggaa gcgcgccagc 660

aagggcuccg agacgugcgg cuucgucgac gagcgggggc ucuacaagag ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccugggug 780

gcgaugcaga ccagcaacga gaccaagugg ugcccgcccg accagcuggu caaccugcac 840

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gagugccugg acgcccucga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcucgu gcccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guccggacgu ggaacgagau ccugcccucc 1080

aaggggugcc uccgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggcaacgug cugauccccg agaugcagag cucccuccug 1200

cagcagcaca uggagcugcu cgagagcucc gucaucccgc ugaugcaccc ccuggcggac 1260

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cuccugagcg ccggcgcccu gaccgcccuc augcugauca ucuuccugau gaccugcugc 1440

cgccgcguga accgguccga gcccacgcag cacaaccugc gcgggaccgg ccgggagguc 1500

agcgugaccc cgcaguccgg gaagaucauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacccgcc ucuga 1575

<210> 96002
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713663.1

<400> 96002
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucacccugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

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ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc guggagaccu ggaacgagau ccuccccucc 1080

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ggcaucaucc uggggcccga cggcaacguc cucauccccg agaugcagag cucccugcug 1200

cagcagcaca uggagcuccu ggagagcucc gugaucccgc uggugcaccc ccucgccgac 1260

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cugcugagcg ccggcgcccu caccgcccug augcugauca ucuuccugau gacgugcugc 1440

cggcgcguga accgcuccga gcccacccag cacaaccucc gggggaccgg ccgcgaggug 1500

agcgucacgc cccaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagaccaucc uguga 1575

<210> 96003
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN713666.1

<400> 96003
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuaccgcugg 420

cugcggaccg ugaagaccac caaggagucc cucgugauca ucagcccguc cgucgcggac 480

cuggaccccu acgaccgcag ccugcacucc cgggguguucc ccagcggcaa gugcuccggg 540

guggccguca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcgcc ucggcauguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagcg agacgugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaugcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

agcaugcaga ccagcaacga gaccaagugg ugcccgcccg acaagcuggu gaaccuccac 840

gacuuccggu ccgacgagau cgagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug acgaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu ccccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guggagacgu ggaacgagau ccuccccucc 1080

aaggggugcc ugcgggucgg cgggcgcugc cacccccacg ugaacggcgu guucuucaac 1140

ggcaucaucc uggggcccga cggcaacguc cucauccccg agaugcagag cucccugcug 1200

cagcagcaca uggagcuccu ggagagcucc gugaucccgc uggugcaccc ccucgccgac 1260

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cggcgcguga accgcuccga gcccacgcag cacaaccucc gggggaccgg ccgcgaggug 1500

agcgucaccc cgcaguccgg gaagaucauc agcuccuggg agagccacaa gagcggcggg 1560

gagaccaucc uguga 1575

<210> 96004
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LN879481.2

<400> 96004
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uuccccaucu acaccauccc cgacaagcug ggccccuggu ccccgaucga cauccaccac 120

cugagcugcc ccaacaaccu cguggucgag gacgaggggu gcaccaaccu guccggcuuc 180

agcuacaugg agcugaaggu gggguacauc uccgccauca aggugaacgg cuucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggguacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccggcg acccgcggua cgaggagagc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ugaagaccac caaggagucc cuggugauca ucagccccuc cgucgcggac 480

cucgacccgu acgacaagag ccugcacucc cgggguguucc ccgggggcaa gugcagcggg 540

aucacggugu ccagcaccua cugcuccacc aaccacgacu acaccaucug gcugcccgag 600

aacccccgcc ucggcacgag cugcgacauc uucaccaacu cccggggcaa gcgcgccagc 660

aagggggucca agaccugcgg cuucgucgac gagcgggggc uguacaagag ccugaagggc 720

gccugcaagc ucaagcugug cggcgugcug gggcuccgcc ugaucgacgg caccugggug 780

gccaugcaga cgagcaacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccggu ccgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccggcgccug 960

ucccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guccgcaccu ggaacgagau caucccccucc 1080

aaggggugcc uccgggugggg cggccgcugc caccaccacg ucaacggggu guucuucaac 1140

ggcaucaucc uggggccgga cggccacgug cugauccccg agaugcagag cucccuccug 1200

cagcagcaca uggagcugcu cgagagcucc gucauccccc ugaugcaccc ccuggccgac 1260

ccgagcaccg uguucaagga cggggacgag gcggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucuc cggcguggac cugggccugc ccaacugggg gaaguacgug 1380

cuccugagcg ccggcgcccu gaucgcccuc augcugauca ucuuccugau gacgugcugc 1440

cggcgcguga accggcccga guccacccag ccgagcuucc gcgggaccga gcgcaagguc 1500

uccaucacgc cccagagcgg caaggugauc uccagcuggg agagcuacaa guccgggggc 1560

gagacccggc uguga 1575

<210> 96005
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from
glycoprotein__RABV__LT598537.1

<400> 96005
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 96006
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LT598538.1

<400> 96006
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

agcaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccggu ccgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcgcucga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc gugcggaccu ggaacgagau caucccccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gugaucccgc ucaugcaccc ccuggccgac 1260

cccagcaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucuc cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa gagcacccag cacucccucg ggggcaucgg gcgcaagguc 1500

agcuccacca gccaguccgg caaggugauc agcagcuggg aguccuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96007
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LT598540.1

<400> 96007
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccgggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaugaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcucaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacgcgcc uguga 1575

<210> 96008
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LT598541.1

<400> 96008
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

agcaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccggu ccgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcgcucga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc gugcggaccu ggaacgagau caucccccucc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca uggagcugcu ggagagcucc gugaucccgc ucaugcaccc ccuggccgac 1260

cccagcaccg uguucaagga cggggacgag gcggaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucuc cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugac gaccugcugc 1440

gggcgcggca accggcccaa gagcacccag cacucccucg ggggcaucgg gcgcaagguc 1500

agcuccacca gccaguccgg caaggugauc agcagcuggg aguccuacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 96009
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__LT598543.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

ggcaucaucc ucgggcccga cggccacguc cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc cgaacugggg caaguacgug 1380

cugaucaucg ccggcgugcu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccaagcag cacagccucg ggggcaucgg gcgcaagguc 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 96010
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__M13215.1

<400> 96010
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc agcgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ucaagaccac caaggagagc cuggugauca ucuccccgag cguggcggac 480

cucgaccccu acgaccgguc ccugcacagc cgcgucuucc ccggcgggaa cugcuccggc 540

guggccguga gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcggc uggggauguc cugcgacauc uucaccaaca gccgcggcaa gcgggccucc 660

aagggcagcg agacgugcgg guucgucgac gagcgcggcc ucuacaaguc ccugaagggg 720

gccugcaagc ugaagcucug cggcgugcug ggccugcggc ucauggacgg gaccugggug 780

gcgaugcaga ccagcaacga gaccaagugg ugcccgcccg gccagcuggu caaccugcac 840

gacuuccgca gcgacgagau cgagcaccuc gugguggagg agcuggucaa gaagcgggag 900

gagugccugg acgcccucga guccaucaug acgaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu gcccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccggacgu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cggccggugc cacccccacg ucaacggggu guucuucaac 1140

ggcaucaucc ucgggcccga cggcaacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggucuccagc gugaucccgc ucaugcaccc ccuggcggac 1260

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cugcucuccg ccggcgcccu gaccgcccug augcucauca ucuuccugau gaccugcugg 1440

cggcgcguga accgcagcga gcccacgcag cacaaccugc gggggaccgg ccgcgagguc 1500

uccgugaccc cgcagagcgg gaagaucauc uccagcuggg aguccuacaa gagcggcggc 1560

gagaccgggc uguga 1575

<210> 96011
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__M32751.1

<400> 96011
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga ccugcaccac 120

cucuccugcc ccaacaaccu gguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcucaaggu gggcuacauc agcgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ugaagaccac caaggagagc cucgugauca ucuccccgag cgucacggac 480

cuggaccccu acgacaaguc ccugcacagc cgggguuucc ccggcgggaa cugcuccggc 540

aucaccguga gcuccaccua cugcagcacc aaccacgacu acacgaucug gaugcccgag 600

aaccuccgcc uggggaccuc cugcgacauc uucacccaca gccggggcaa gcgcgcgucc 660

aagggcgaca agaccugcgg guucgucgac gagcggggcc uguacaagag ccucaagggg 720

gccugcaagc ugaagcugug cggcgugcuc ggccugcgcc ugauggacgg gacgugggug 780

gccaugcaga ccuccgacga gaccaagugg ugcccgcccg gccagcucgu caaccugcac 840

gacuuccgga gcgacgagau cgagcaccug guggaggagg agcucgugaa gaagcgcgag 900

gagugccugg acgcccugga gagcaucaug accacgaagu ccgucagcuu ccggcgccuc 960

ucccaccucc ggaagcuggu gcccggguuc ggcaaggcgu acaccaucuu caacaagacc 1020

cucauggagg ccgacgccca cuacaagagc gugcagaccu ggaacgagau caucccccucc 1080

aaggggugcc ugcgcgucgg cgagcggugc cacccgcacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggcagcga cgggcacgug cucauccccg agaugcaguc cagccugcug 1200

cagcagcaca uggagcuccu ggaguccagc gugauccccc ugaugcaccc ccucgccgac 1260

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cugaugaucg ccggggcgcu gaucgcccuc augcugauca ucuuccugau gaccugcugc 1440

cgccggguga accgccccga guccacccag agcaaccugg gcgggaccgg ccggaacguc 1500

uccgugccga gccaguccgg gaaggugauc agcuccuggg agagcuacaa gagcggcggc 1560

gagacgcgcc ucuga 1575

<210> 96012
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__M81058.1

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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuccgcugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu guccggguuc 180

agcuacaugg agcugaaggu gggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgga agcacuuccg ccccacgccg gacgccugcc gggccgccua caacuggaag 360

auggccgggg acccccgcua cgaggagagc cuccacaacc ccuaccccga cuaccacugg 420

cugcggaccg ugaagaccac caaggagucc cuggugauca ucagcccguc cgucgcggac 480

cucgaccccu acgacaagag ccugcacucc cgcguguucc ccagcggcaa cugcuccggg 540

aucacgguga gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcggc uggagacguc cugcgacauc uucaccaaca gccgcggcaa gcgggccucc 660

aaggggagca agaccugcgg cuucgucgac gagcgcggcc ucuacaaguc ccugaagggg 720

gccugcaagc ugaagcucug cggcgugcug gggcugcggc ucauggacgg caccugggug 780

gccaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccugcac 840

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gagugccugg acgcgcucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcuggu gcccggcuuc gggaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccggaccu ggaacgagau caucccccagc 1080

aagggcugcc ugcgcgucgg gggccggugc cacccccacg ugaacggggu guucuucaac 1140

ggcaucaucc ucggccccga cgggcacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucaucccgc ucaugcaccc ccuggccgac 1260

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gacgugcaca agcaggucag cgggguggac cugggccugc cgaacugggg gaaguacgug 1380

cugcucuccg ccggcacgcu gaucgcccug augcucauca ucuuccugau gaccugcugc 1440

cgccggguga accgccccaa gagcaccgag cgcucccugg gcgagaccgg gcggaagguc 1500

agcgugacgu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccgggggc 1560

gagacccgcc gguga 1575

<210> 96013
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__M81059.1

<400> 96013
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuccgcugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu guccggguuc 180

agcuacaugg agcugaaggu gggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgga agcacuuccg ccccacgccg gacgccugcc gggccgccua caacuggaag 360

auggccgggg acccccgcua cgaggagagc cuccacaacc ccuaccccga cuaccacugg 420

cugcggaccg ugaagaccac caaggagucc cuggugauca ucagcccguc cgucgcggac 480

cucgaccccu acgacaagag ccugcacucc cgcguguucc ccagcggcaa cugcuccggg 540

aucacgguga gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccgcggc uggagacguc cugcgacauc uucaccaaca gccgcggcaa gcgggccucc 660

aaggggagca agaccugcgg cuucgucgac gagcgcggcc ucuacaaguc ccugaagggg 720

gccugcaagc ugaagcucug cggcgugcug gggcugcggc ucauggacgg caccugggug 780

gccaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccugcac 840

gacuuccgca gcgacgagau cgagcaccuc gugguggagg agcuggucaa gaagcgggag 900

gagugccugg acgcgcucga guccaucaug accaccaaga gcguguccccu gcgccggcug 960

agccaccucc gcaagcuggu gcccggcuuc gggaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgaggccca cuacaagucc guccagaccu ggaacgagau caucccccagc 1080

aagggcugcc uccgggucgg gggccgcugc cacccccacg ugaacggggu guucuucaac 1140

ggcaucaucc ugggccccga cgggcacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucauccccgc ugaugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggcgacgag gcggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucag cgggguggac cugggccugc cgaacugggg gaaguacgug 1380

cuccuguccg ccggcacgcu gaucgcccuc augcugauca ucuuccugau gaccugcugc 1440

cggcgcguga accggcccaa gagcaccgag cgcucccugg gcgagaccgg gcgcaagguc 1500

agcgugacgu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccgggggc 1560

gagacccggc gcuga 1575

<210> 96014
<211> 1575
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__M81060.1

<400> 96014
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uuccccaucu acaccauccc cgacaagcug gggcccuggu ccccgaucga cauccaccac 120

cugagcugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu guccggguuc 180

agcuacaugg agcugaaggu gggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgucg ugaccgaggc ggagaccuac acgaacuucg ugggcuacgu caccaccacc 300

uucaagcgca agcacuuccg gcccacgccc gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccgcggua cgaggagagc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ugaagaccac caaggagucc cuggugauca ucagccccuc cgucgcggac 480

cucgacccgu acgacaagag ccugcacucc cgggguguucc ccagcggcaa cugcuccggg 540

aucacgguga gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacccccgcc uggagacguc cugcgacauc uucaccaaca gccggggcaa gcgcgccucc 660

aaggggagca agaccugcgg cuucgucgac gagcggggcc ucuacaagag ccugaagggg 720

gccugcaagc ugaagcucug cggcgugcug gggcugcgcc ucauggacgg caccugggug 780

gccaugcaga cguccgacga gaccaagugg ugcccgcccg accagcuggu caaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc gugguggagg agcuggucaa gaagcgcgag 900

gagugccugg acgcgcucga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcucgu gcccggcuuc gggaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aagggcugcc ugcgggucgg gggccgcugc cacccgcacg ugaacggggu guucuucaac 1140

ggcaucaucc ucggccccga cgggcacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gucauccccc ucaugcaccc gcuggccgac 1260

cccuccaccg uguucaagga cggcgacgag ggggaggacu ucguggaggu ccaccucccc 1320

gacgugcaca agcaggucag cggcguggac cuggggcugc ccaacugggg caaguacgug 1380

cugcucuccg cgggcacgcu gaucgcccug augcucauca ucuuccugau gaccugcugc 1440

cggcgcguga accggcccaa gagcaccgag cgcucccugg gggagaccgg ccgcgagguc 1500

agcgugacgu cccagagcgg gaagaucauc agcuccuggg agagcuacaa guccggcggg 1560

gagacccggc gcuga 1575

<210> 96015
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__S72465.1

<400> 96015
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uuccccaucu acaccauccc cgacacccuc ggccccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgaggggu gcacgaaccu cagcggcuuc 180

uccuacaugg agcugaaggu cgggcacauc agcgccauca aggugaacgg cuucacgugc 240

accggcgugg ucaccgaggc ggagaccuac accaacuucg ugggguacgu gaccaccacg 300

uucaagcgca agcacuuccg gcccaccccc gacgccugcc gcgccgccua caacuggaag 360

auggccggcg acccgcggua cgaggagucc cugcacagcc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac gaaggagucc cuggugauca ucagccccuc cguggcggac 480

cuggacccgu acgacaacag ccuccacucc cgggucuucc ccagcgggaa gugcuccggc 540

aucaccguga gcuccgugua cugcagcacc aaccacgacu acaccgucug gaugcccgag 600

ucccugcgcc uggggacgag cugcgacauc uucaccaaca gccggggcaa gcgcgugucc 660

aagggcagca agaccugcgg guucguggac gagcggggcc ucuacaaguc ccugaagggg 720

gccugcaagc ugaagcucug cggcguccgc ggccugcggc ugauggacgg gaccugggug 780

gccaugcaga cgagcaacga gaccaagugg ugcccgcccg accagcucgu gaaccugcac 840

gaccugcgcu ccgacgagau cgagcaccuc gucaucgagg agcuggugaa gaagcgggag 900

gagugccugg acgcccucga gagcaucauc accaccaagu ccgugagcuu ccgccggcug 960

uccuaccugc gcaagcucgu ccccggcuuc gggaaggcgu acacgaucuu caacaagacc 1020

cugauggagg ccgaggccca cuacaagagc gugcggaccu ggaacgagau caucccccucc 1080

aagggcugcc ugcgcgucgg gggccggugc cacccccacg ugaacggcgu guucuucaac 1140

gggaucaucc ucggcccgga cgggcacguc cugauccccg agaugcagag cucccugcuc 1200

cagcagcaca ucgagcugcu ggagagcucc gugauccccc ucaugcaccc ccuggccgac 1260

ccguucaccg uguucaagga cggcgacgag acggaggacu ucaucgaggu ccaccucccc 1320

gacgugcacg agcaggucag cgggguggac cugggccugc ccaacugggg cgaguacgug 1380

cugcucuccg ccgggacccu gaucgcgcug augcucauca ucuuccugau gaccugcugc 1440

cgcaaggugg accggcccga gagcacccag cgcucccugc gcggcacggg gcggaacguc 1500

agcgugacca gccaguccgg caaguucauc ccgagcuggg aguccuacaa gagcgggggc 1560

gagaccggcc uguga 1575

<210> 96016
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U03764.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96017
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U03765.1

<400> 96017
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu ggucuucaac 1140

ggcaucaucc ucgggcccga cggccacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

cccuccaccg ucuucaagga cggggacgag gccgaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcagaucag cggcguggac cuggggcugc cgaacugggg caaguacgug 1380

cugacgaucg ccggcguccu caucgccaug auccugacca ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

uccagcacgu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcggg 1560

gagacccgcc uguga 1575

<210> 96018
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U03766.1

<400> 96018
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

gcgaugccga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccugcac 840

gacuuccgga gcgacgagau cgagcaccuc guggucgagg agcuggugcg caagcgggag 900

gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgcguggg cgggcggugc cacccccacg ucaacggcgu ggucuucaac 1140

ggcaucaucc ucgggcccga cggccacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugaucccgc ucaugcaccc ccuggcggac 1260

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cugaucaucg ccggcguccu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

gggcgcggca accggcccaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

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gagacgcgcc uguga 1575

<210> 96019
<211> 1575

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U03767.1

<400> 96019
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgac 600

aacguccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc ucuacaaguc ccugaagggc 720

gccugcaagc ugaagcucug cggggugcug ggccugcgcc ucauggacgg caccuggguc 780

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gagugccugg acgcccucga guccaucaug accaccaaga gcguguccuu ccgccggcug 960

agccaccucc gcaagcucgu ccccggcuuc gggaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcggaccu ggaacgagau caucccccagc 1080

aagggcugcc ugcgcgucgg gggccggugc cacccccacg ugaacggcgu ggucuucaac 1140

gggaucaucc ucggccccga cgggcacgug cugauccccg agaugcaguc cagccugcuc 1200

cagcagcaca uggagcugcu ggaguccagc gugauccccgc ucaugcaccc ccuggcggac 1260

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gacguccaca agcagaucag cgggguggac cugggccugc cgaacugggg caaguacgug 1380

cugaucaucg ccgggguccu caucgccaug auccugacga ucuuccugau gaccugcugc 1440

ggccgcggga accggcccaa guccacccag cacagccucg gcgggaucgg ccgcaaggug 1500

uccagcaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccgggggc 1560

gagacgcgcc uguga 1575

<210> 96020
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11736.2

<400> 96020
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cgugguggag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ucaagaccau gaaggagagc cugaucauca ucuccccgag cguggccgac 480

cucgaccccu acgacaaguc ccugcacagc cgggguuucc ccuccggcaa gugccugggg 540

aucaccauca gcuccacgua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccuccgcc ugggcaccuc cugcgacauc uucacgaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccucaagggc 720

gccugcaagc ugaagcugug cggggugcuc ggccugcgcc ugauggacgg caccugggug 780

gcgaugcaga ccagcgacga gacgaagugg ugcccgcccg accagcucgu caaccugcac 840

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gagugccugg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccuc 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc ugcgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

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agcgccaccu cccagagcgg caaggugauc uccagcuggg agagcuacaa guccggcagc 1560

gagacccgcc uguga 1575

<210> 96021
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11743.2

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccaguccccg caaggugauc agcuccuggg agagcuacaa gagcggcggc 1560

gagacgcgcc uguga 1575

<210> 96022
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11747.2

<400> 96022
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccagucccg caaggugauc agcuccuggg agagcuacaa gagcggcggc 1560

gagacgcgcc uguga 1575

<210> 96023
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11748.2

<400> 96023
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau cauccccagc 1080

aaggggugcc uccgggguggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96024

<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11750.2

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgagga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccggguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccacg auccugacca ucuuccucau ggccugcugc 1440

gggcgcggca accggccgaa guccacccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccgcgacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96025
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11752.2

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

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cucaucaucg ccggcgugcu gaucgucaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaaggug 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96026
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11753.1

<400> 96026
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggaagugc cacccgcacg ugaacggcgu cuucuucaac 1140

ggcaucaucc uggggcccga cggccacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucauccccc ugaugcaccc gcuggcggac 1260

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gacgugcaca agcagaucag cggcguggac cuggggcugc ccaacugggg caaguacguc 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcgcggca accggccgaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

uccgccacca gccaguccgg caaggucauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcggc uguga 1575

<210> 96027
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11754.1

<400> 96027
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguguggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuaccugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ucaagaccac caaggagagc ccgaucauca ucucccccag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugccggag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca aggccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gcgugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gccaugcaga ccagcgacga gacgaagugg ugcccgcccg accagcuggu caaccuccac 840

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gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgcgca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggguggg cgggcgcugc cacccccacg ugaacggcgu cuucuucaac 1140

ggcaucaucc uggggcccga cggccacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gucaucccgc ugaugcaccc ccuggccgac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucguggaggu ccaccucccc 1320

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cucaucaucg ccggcgugcu gaucgccaug cugcucaccg uguuccugau gacgugcugc 1440

gggaagggca accggcccaa guccauccag cacagccucg ggggcaucgg gcgcaagguc 1500

uccgcgacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacccggc uguga 1575

<210> 96028
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11755.1

<400> 96028
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cgugguggag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cuccacaacc ccuaccccga cuaccacugg 420

cugcgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cucgaccccu acgacaaguc ccugcacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccuccgcc ugggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccucaagggc 720

gccugcaagc ugaagcugug cggggugcuc ggccugcgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcucgu caaccugcac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcucgucaa gaagcgcgag 900

gagugccugg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccuc 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau cauccccagc 1080

aaggggugcc ugcgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cucauccccg agaugcaguc cagccugcug 1200

cagcagcaca uggagcuccu ggaguccagc gugauccccc ugaugcaccc gcucgcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

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gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcucc 1560

gagacgcgcc uguga 1575

<210> 96029
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11756.1

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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgucgccua caacuggaag 360

auggccgggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ugaagaccac caaggagagc cugaucauca ucuccccgag cguggcggac 480

cuggaccccu acgacaaguc ccuccacagc cgggucuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucguggac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccuggguc 780

gccaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu gaaccuccac 840

gacuuccgga gcgacgagau cgagcaccug guggucgagg agcuggugaa gaagcgcgag 900

gagugccucg acgcgcugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu ccccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc gugcgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggaagugc cacccgcacg ucaacggcgu ggucuucaac 1140

ggcaucaucc uggggcccga cggccacgug cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggccgac 1260

cccuccaccg ucuucaagga cggggacgag gcggaggacu ucguggaggu gcaccucccc 1320

gacguccaca agcagaucag cggcguggac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcguccu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcgcggca accggccgaa guccacccag cacagccucg ggggcaucgg gcgcaaggug 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcggc uguga 1575

<210> 96030
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11757.1

<400> 96030
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguguucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacgg ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccauccag cacagccucg ggggcaucgg gcggaaggug 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacccgcc uguga 1575

<210> 96031
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U11758.1

<400> 96031
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uuccccaucu acaccauccc cgacaagcuc gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaccaaccu cagcggguuc 180

uccuacaugg agcugaaggu cggcuacauc agcgcgauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc cgagaccuac acgaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuuccg gcccacgccg gacgccugcc gcgccgccua caacuggaag 360

auggcggggg acccccggua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccgcaccg ucaagaccac caaggagagc cugaucauca ucuccccgag cguggccgac 480

cuggaccccu acgacaaguc ccuccacagc cgggguuucc ccuccggcaa gugccugggg 540

aucacgauca gcuccaccua cugcagcacc aaccacgacu acaccaucug gaugcccgag 600

aaccugcgcc ucggcacguc cugcgacauc uucaccaaca gccgggggaa gcgcgccucc 660

aagggcagca agaccugcgg cuucgucgac gagcgggggc uguacaaguc ccugaagggc 720

gccugcaagc ucaagcugug cggggugcug ggccuccgcc ugauggacgg caccugggug 780

gcgaugcaga cgagcgacga gaccaagugg ugcccgcccg accagcuggu caaccuccac 840

gacuuccgga gcgacgagau cgagcaccug gugguggagg agcuggucaa gaagcgcgag 900

gagugccucg acgcccugga guccaucaug accaccaaga gcguguccuu ccggcgccug 960

agccaccucc ggaagcuggu gcccggguuc ggcaaggccu acacgaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagucc guccgcaccu ggaacgagau caucccccagc 1080

aaggggugcc uccgggugggg cgggcgcugc cacccgcacg ugaacggcgu cguguucaac 1140

ggcaucaucc uggggcccga cggccacguc cugauccccg agaugcaguc cagccuccug 1200

cagcagcaca uggagcugcu cgaguccagc gugauccccc ugaugcaccc gcuggcggac 1260

cccuccaccg uguucaagga cggggacgag gccgaggacu ucgucgaggu gcaccucccc 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccaacugggg caaguacgug 1380

cucaucaucg ccggcgugcu gaucgccaug auccugacga ucuuccucau gaccugcugc 1440

gggcggggca accgcccgaa guccacccag cacagccucg ggggcaucgg gcggaagguc 1500

uccgccacca gccaguccgg caaggugauc agcuccuggg agagcuacaa gagcggcggg 1560

gagacgcgcc uguga 1575

<210> 96032
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U27214.1

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uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaacagccu cuccggguuc 180

agcuacaugg agcugaaggu cggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac accaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuucug ccccaugccc gacgccugcc ggagcgccua caacuggaag 360

auggccgggg acccgcgcua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccggaccg ucaagacgac caaggagagc cuggugauca ucucccccag cguggccgac 480

cuggacccgu acgacaaguc ccuccacagc cgcaucuucc ccggcgggaa gugcaccggc 540

cugaccgucu ccagcacgua cugcuccacc aaccacgacu acaccaucug gaugcccgag 600

aaggcggggc ugggcaccag cugcgacauc uucacgaacu ccaagggcaa gcgggccagc 660

aagggcggga agaccugcgg guucguggac gagcgcggcc ucuacaagag ccugaagggc 720

gccugcaagc ugaagcucug cggggugucc ggccugcggc ugauggacgg gaccuggguc 780

gccauccaga cccucgacga gacgaagugg ugcagccccg accagcuggu gaaccugcac 840

gacuuccacu ccgacgagcu cgagcaccug guggucgagg agcuggugcg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu cccgggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc gugcggaccu gguccgagau cauccccagc 1080

aagggcugcc uccgcguggg cgggcggugc cacccccacg ucaacggcgu guucuucaac 1140

gggaucaucc ugggccccga cgggcacguc cugaucccgg agaugcaguc cagccuccug 1200

cagcagcacg uggagcugcu cgaguccagc gugauccccc ugaugcaccc ccuggccgac 1260

cccuccgcgg ucuucaagga cggcgacgag gccgaggacu ucguggaggu gcaccucccg 1320

gacguccaca agcagaucag cggcguggac cuggggcugc ccuccugggg caaguacaug 1380

cucaugaucg ccggggcccu gaccacccug augcuguuca ucuuccugau gacgugcugc 1440

aagcgcguga accggaccaa gagcauccgc cagggccccc gggagaucga gcgcaagguc 1500

uccuucacgc cccagaacaa gaagguggug agcagcuggg aguccuacaa gagcgggggc 1560

gagaccaagc uguga 1575

<210> 96033
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U27215.1

<400> 96033

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cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaacagccu cuccggguuc 180

agcuacaugg agcugaaggu cggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac accaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuucug ccccaugccc gacgccugcc ggagcgccua caacuggaag 360

auggccgggg acccgcgcua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccggaccg ucaagacgac caaggagagc cugaucauca ucucccccag cguggccgac 480

cuggacccgu acgacaaguc ccuccacagc cgcaucuucc ccggcgggaa gugcaccggc 540

cugaccgugu ccagcacgua cugcuccacc aaccacgacu acaccaucug gaugcccgag 600

aaggcggggc ugggcaccag cugcgacauc uucacgaacu ccaagggcaa gcgggccagc 660

aagggcggga agaccugcgg guucgucgac gagcgcggcc ucuacaagag ccugaagggc 720

gccugcaagc ugaagcucug cgggguguccc ggccugcggc ugauggacgg gaccugggug 780

gccauccaga cccucgacga gacgaagugg ugcagccccg accagcuggu caaccugcac 840

gacuuccacu ccgacgagcu cgagcaccug gugguggagg agcugguccg caagcgggag 900

gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gccgggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc guccggaccu gguccgagau caucccccagc 1080

aagggcugcc uccgcguggg cgggcggugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugaucccgg agaugcaguc cagccuccug 1200

cagcagcacg ucgagcugcu cgaguccagc gugauccccc ugaugcaccc ccuggccgac 1260

cccuccgcgg uguucaagga cggcgacgag gccgaggacu ucgucgaggu gcaccucccg 1320

gacgugcaca agcagaucag cggcgucgac cuggggcugc ccuccugggg caaguacaug 1380

cucaugaucg ccggggcccu gaccacccug augcuguuca ucuuccugau gacgugcugc 1440

aagcgcguga accggaccaa gagcauccgc cagggccccc gggagaucga gcgcaaggug 1500

uccuucacgc cccagaacaa gaaggucgug agcagcuggg aguccuacaa gagcgggggc 1560

gagaccaagc uguga 1575

<210> 96034
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U27216.1

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uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaacagccu cuccggguuc 180

agcuacaugg agcugaaggu cggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac accaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuucug ccccaugccc gacgccugcc ggagcgccua caacuggaag 360

auggccgggg acccgcgcua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccggaccg ucaagacgac caaggagagc cugaucauca ucucccccag cguggccgac 480

cuggacccgu acgaccgcuc ccuccacagc cggaucuucc ccggcgggaa gugcaccggc 540

cugaccgugu ccagcacgua cugcuccacc aaccacgacu acaccaucug gaugcccgag 600

aaggcggggc ugggcaccag cugcgacauc uucacgaacu ccaagggcaa gcgcgccagc 660

aagggcggga agaccugcgg guucgucgac gagcggggcc ucuacaagag ccugaagggc 720

gccugcaagc ugaagcucug cgggguguccc ggccugcgcc ugauggacgg gaccugggug 780

gccauccaga cccucgacga gacgaagugg ugcagccccg accagcuggu caaccugcac 840

gacuuccacu ccgacgagcu cgagcaccug gugguggagg agcugguccg gaagcgcgag 900

gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccggcgccug 960

ucccaccucc ggaagcuggu gccgggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc guccgcaccu gguccgagau caucccccagc 1080

aagggcugcc uccgggugggg cgggcgcugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugaucccgg agaugcaguc cagccuccug 1200

cagcagcacg ucgagcugcu cgaguccagc gugauccccc ugaugcaccc ccuggccgac 1260

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cucaugaucg ccggggcccu gaccacccug augcuguuca ucuuccugau gacgugcugc 1440

aagcggguga accgcaccga gagcauccgg cagggccccc gcgagcugga guccaaggug 1500

agcgucacgc cccagaacaa gaaggugauc agcuccuggg agagcuacaa guccgggggc 1560

gagaccaagc uguga 1575

<210> 96035
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__U27217.1

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uuccccaucu acaccauccc cgacaagcuc gggcccugga gcccgaucga cauccaccac 120

cuguccugcc ccaacaaccu gguggugggag gacgagggcu gcaacagccu cuccggguuc 180

agcuacaugg agcugaaggu cggcuacauc uccgccauca aggugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaccuac accaacuucg ugggcuacgu gaccaccacc 300

uucaagcgca agcacuucug ccccaugccc gacgccugcc ggagcgccua caacuggaag 360

auggccgggg acccgcgcua cgaggagucc cugcacaacc ccuaccccga cuaccacugg 420

cuccggaccg ucaagacgac caaggagagc cugaucauca ucuccccccag cguggccgag 480

cuggacccgu acgacaaguc ccuccacagc cgcaucuucc ccggcgggaa gugcaccggc 540

cugaccgugu ccagcacgua cugcuccacc aaccacgacu acaccaucug gaugcccgag 600

aaggcggggc ugggcaccag cugcgacauc uucacgaacu ccaagggcaa gcgggccagc 660

aagggcggga agaccugcgg guucgucgac gagcgcggcc ucuacaagag ccugaagggc 720

gccugcaagc ugaagcucug cggggugucc ggccugcggc ugauggacgg gaccugggug 780

gccauccaga cccucgacga gacgaagugg ugcagccccg accagcuggu caaccugcac 840

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gagugccucg acgcgcugga gagcaucaug accaccaagu ccgugagcuu ccgccggcug 960

ucccaccucc gcaagcuggu gccgggcuuc gggaaggccu acaccaucuu caacaagacg 1020

cugauggagg ccgacgccca cuacaagagc guccggaccu gguccgagau caucccccagc 1080

aagggcugcc uccgcguggg cgggcggugc cacccccacg ugaacggcgu cuucuucaac 1140

gggaucaucc ugggccccga cgggcacgug cugaucccgg agaugcaguc cagccuccug 1200

cagcagcacg ucgagcugcu cgaguccagc gugauccccc ugaugcaccc ccuggccgac 1260

cccuccgcgg uguucaagga cggcgacgag gccgaggacu ucgucgaggu gcaccucccg 1320

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cucaugaucg ccggggcccu gaccacccug augcuguuca ucuuccugau gacgugcugc 1440

aagcgcguga accggaccaa gagcauccgc cagggccccc gggagaucga gcgcaaggug 1500

uccuucacgc cccagaacaa gaaggucgug agcagcuggg aguccuacaa gagcgggggc 1560

gagaccaagc uguga 1575

<210> 96036
<211> 1575
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt1) from glycoprotein__RABV__X71879.1

<400> 96036
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uuccccaucu acaccauccc cgacaagcug gggccgugga gccccaucga cauccaccac 120

cuguccugcc ccaacaaccu cguggucgag gacgagggcu gcaccaaccu gagcggguuc 180

uccuacaugg agcugaaggu gggcuacauc cucgccauca agaugaacgg guucacgugc 240

accggcgugg ucaccgaggc ggagaacuac accaacuucg ugggcuacgu gacgaccacc 300

uucaagcgca agcaccuccg gcccaccccg gacgccugcc gcgccgccua caacuggaag 360

auggccgggg acccccggua cgaggagagc cugcacaacc ccuaccccga cuacuccugg 420

cuccgcacgg ucaagaccac caaggagagc cuggugauca ucuccccgag cguggcggac 480

cuggaccccu acgaccgguc ccuccacagc cgcgucuucc ccuccggcaa gugcagcggg 540

guggccgugu ccagcaccua cugcuccacg aaccacgacu acaccaucug gaugcccgag 600

aacccgcggc ugggcaagag cugcgacauc uucaccaacu cccgcgggaa gcgggccagc 660

aagggcuccg agaccugcgg cuucgucgac gagcgcgggc uguacaagag ccucaagggc 720

gccugcaagc ugaagcugug cggggugcuc ggccugcggc ugauggacgg cacgugggug 780

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gagugccugg acgcccugga gagcaucaug accacgaagu ccgugagcuu ccggcgccuc 960

ucccaccucc ggaagcuggu gcccggguuc ggcaaggccu acaccaucuu caacaagacc 1020

cugauggagg ccgacgccca cuacaagagc guccgcaccu ggaacgagau ccugcccucc 1080

aaggggugcc ugcgggguggg cgggcgcugc cacccccacg ucaacggcgu guucuucaac 1140

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cggcgcguca accgcuccga gcccacccag cacaaccugc gggggacggg ccgcgaggug 1500

agcgugaccc cgcagaccug gaagaucauc uccagcuggg agucccacaa gagcgggggc 1560

gagacccggc uguga 1575

<210> 96037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAA16879

<400> 96037
auggaggcca agcucuucgu ccucuucugc accuucaccg uccucaaggc cgacaccauc 60

ugcgucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcucc 180

cucaacggca ucgccccccu ccagcucggc aagugcaacg ucgccggcug gcuccucggc 240

aaccccgagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccgaga acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaccaa gggcgucacc gccgccugcu ccuacuccgg cgccuccucc 480

uucuaccgca accuccucug gaucaccaag aagggcaccu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucguccucu ggggcgucca ccacccccc 600

accaccuccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuc cgucggcucc 660

uccaaguaca accgccgcuu cacccccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucaacaaggg cuccgacucc 840

ggcaucauca ccuccgacgc ccccguccac aacugcgaca cccgcugcca gaccccccac 900

ggcgcccuca acuccucccu ccccuuccag aacguccacc ccaucaccau cggcgagugc 960

cccaaguaca ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaaccu cgagcgccgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acgucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacguccgc 1380

aaccucuacg agaaggucaa gucccagcuc cgcaacaacg ccaaggagcu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac gagugcaugg agcgcgagaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96038
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<212> RNA
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hemagglutinin__InfluenzaA__AAA16880

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcucc 180

cucaacggca ucgccccccu ccagcucggc aagugcaacg ucgccggcug gcuccucggc 240

aaccccgagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccgaga acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaccaa gggcgucacc gccgccugcu ccuacuccgg cgccuccucc 480

uucuaccgca accuccucug gaucaccaag aagggcaccu ccuaccccac ccucuccaag 540

uccuacacca acaacaaggg caaggagguc cucguccucu ggggcgucca ccacccccc 600

accgucaacg agcagcaguc ccucuaccag aacgccgacg ccuacgucuc cgucggcucc 660

uccaaguaca accgccgcuu cacccccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacca cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucaacaaggg cuccgacucc 840

ggcaucauca ccuccgacgc ccccguccac aacugcgaca cccgcugcca gaccccccac 900

ggcgcccuca acuccucccu ccccuuccag aacguccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccagaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

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ugcuucgagu ucuaccacaa gugcgacgac gagugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96039
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAA64362

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa guaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgagau cgccacccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc ccgcuacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 96040
<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAA64363

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaucaac 1200

acccaguucg aggccgucga gaaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacuccu ccgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcaucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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ugcaucuga 1689

<210> 96041
<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAA64365

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaaggucg acggccucgg cucccgcaug 720

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucga gaaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacaac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcaucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 96042
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAA64366

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa ggaguccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 96043
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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uccaccaagc gcucccagca gaccgucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu acaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96044
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAC14418

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 96045
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAC40508

<400> 96045

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cacgacgccu ccuccggcgu cuccuccgcc ugccccuacc ucggccgcuc cuccuucuuc 480

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacacccc ccagcgcgag 1020

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccugcuac 1140

uccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucaaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cgucaagaac 1500

ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaaccgcga ggagaucucc 1560

ggcgucaagc ucgaguccau gggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<210> 96046
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAF87274

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg agaccaaccg cggcgucacc uccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaacg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caugcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccaaccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac ccgccuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccaucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaccc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccau cgccuccucc 1620

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<210> 96047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAF87275

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg agaccaaccg cggcgucacc uccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaacg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caugcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccaaccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccaucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaccc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccau cgccuccucc 1620

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<210> 96048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAF87277

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccgaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caagcccgag aucgccuccc gccccaaggu ccgcggccag 720

gccggccgca uggacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 96049
<211> 1701

<212> RNA
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hemagglutinin__InfluenzaA__AAF87278

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccaccccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caagcccgag aucgccuccc gccccaaggu ccgcggccag 720

gccggccgca uggacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 96050
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AAF87279

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caagcccgag aucgccuccc gccccaaggu ccgcggccag 720

gccggccgca uggacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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<210> 96051
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAF87281

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

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cccaaccacg agaccaaccg cggcgucacc uccgccugcc ccuacgccgg cgccaacucc 480

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accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 96052
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 96053
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc uccgccugcc ccuacuccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caugcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccgccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc cgccucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccau cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 96054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAF87284

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc uccgccugcc uccucuucug guccaagcag 480

cuccuccaga agcucaacau ggccggcaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caugcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccgccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc cgccucaacc gcgaggagau cgacggcguc 1560

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<210> 96055
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AAG01749

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga gaagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96056
<211> 1701
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<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacuccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

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aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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ugccccaagu acgucaagca gaagacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96057
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAG01776

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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uccaccaagu ccucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugccccaagu acgucaagca gaagacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAG01785

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacuccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc ggcuccuacu ccugcaagcg cgaguccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAK52911

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAK52912

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AAK71687

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccgagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgccaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcggccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcaa cuccgagucc 840

ggcaucauca ucuccgacau cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 96062
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAS65618

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

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gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 96063
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 96063

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cgcggcuccg gcggcaucga caaggagucc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acuccgacaa cgccgccuuc ccccagauga ccaaguccua ccgcaacccc 540

cgcaacaagc ccgcccucau caucuggggc guccaccacu ccggcuccgc caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa guaccagcag 660

uccuucaccc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc uccuccucga ccccaacgac accgucaccu ucaccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuucuuccgc ggcgaguccc ucggcgucca guccgacguc 840

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cuccccuucc agaacaucaa cccccgcacc gucggcaagu gcccccgcua cgucaagcag 960

accucccucc uccucgccac cggcaugcgc aacgucccccg agaaccccaa gcaggccuac 1020

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cucaucgaca agaccaacca gcaguucgag cucaucgaca acgaguucuc cgagaucgag 1260

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aacaccuacg accacaccca guaccgcacc gaguccccucc agaaccgcau ccagaucgac 1560

cccgucaagc ucuccuccgg cuacaaggac aucauccucu gguucuccuu cggcgccucc 1620

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<210> 96064
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<212> RNA
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<212> RNA
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 96066
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<212> RNA
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hemagglutinin__InfluenzaA__AAV65826

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

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cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

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<210> 96067
<211> 1701

<212> RNA
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hemagglutinin__InfluenzaA__AAX11505

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<210> 96068
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AAX11525

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<210> 96069
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96070
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AAX11545

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96071
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AAX11555

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcgagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcgaca ucugcaucug a 1701

<210> 96072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX11565

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96073
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAX11585

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aucuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX11605

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX11615

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX11625

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX12731

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgucugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX12801

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX12811

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX34061

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96085
<211> 1701

<212> RNA
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hemagglutinin__InfluenzaA__AAX35821

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96086
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96087
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 96088
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96089
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccucccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 96090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX38237

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX47515

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<210> 96092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX47525

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96093
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 96094
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96095
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcgagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96096
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96097
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 96098
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAX56420

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 96100
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96101
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hemagglutinin__InfluenzaA__AAX56450

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccucccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96103
<211> 1701

<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcccc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96104
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96105
<211> 1701
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hemagglutinin__InfluenzaA__AAX56510

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 96106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX56520

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 96108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96110
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96111
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<210> 96113
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96114
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<211> 1701
<212> RNA
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<210> 96116
<211> 1701
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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuccggccc cuggguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96117
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<212> RNA
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<400> 96117

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uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 96118
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96119
<211> 1701
<212> RNA
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<210> 96120
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96121
<211> 1701

<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AAX57734

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96122
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AAX57744

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAX57764

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcgagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96168
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96170
<211> 1701
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<210> 96171
<211> 1701
<212> RNA
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<400> 96171

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96172
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccucccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<210> 96178
<211> 1701
<212> RNA
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<210> 96179
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96180
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96181
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96182
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96183
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96184
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AAY28541

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96185
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAY28551

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<210> 96186
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAY28561

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96187
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAY28581

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AAY44796

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96206
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96209
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96210
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96211
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96212
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96215
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96216
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96217
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96218
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAY64212

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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<210> 96226
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96298
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 96299
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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<210> 96300
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96301
<211> 1701

<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96302
<211> 1701
<212> RNA
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cucgucaaga ccaucgccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AAZ74595

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96304
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAZ74617

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96305
<211> 1701
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<211> 1701
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<210> 96312
<211> 1698
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<210> 96318
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<210> 96320
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<211> 1701
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuaccccc gcuacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABA18026

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABA42247

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96364
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hemagglutinin__InfluenzaA__ABA42302

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96366
<211> 1701
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hemagglutinin__InfluenzaA__ABA42346

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<210> 96367
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hemagglutinin__InfluenzaA__ABA42357

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96368
<211> 1701
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hemagglutinin__InfluenzaA__ABA42379

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgacuacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug cgacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96405
<211> 1701
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<210> 96406
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB02880

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96407
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96408
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABB02902

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96409
<211> 1698

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB02913

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccaccg cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacgc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96411
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB02936

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96412
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccauc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96413
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cgcugcaaca ucugcaucug a 1701

<210> 96414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB02969

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96415
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB02980

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96416
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96419
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96420
<211> 1701
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cucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96421
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96422
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96423
<211> 1701
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<220>
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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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hemagglutinin__InfluenzaA__ABB03134

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96436
<211> 1701
<212> RNA
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<210> 96437
<211> 1701
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<210> 96438
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<210> 96439
<211> 1701
<212> RNA
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ggcaacgaca acuccaaggc cacccucugc cucggccacc acgccguccc caacggcacc 120

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acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96440
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aucuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccguccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96442
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96443
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96444
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96445
<211> 1701

<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96446
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96447
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB05005

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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccgacaucg gcucccgccc cuggguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccaa cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcuccg uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96448
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgagcacauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccaa cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca aggucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96449
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucauca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96450
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cuccgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacaa caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96451
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96452
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB46392

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96453
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB46414

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96454
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB46425

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cucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96455
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB46436

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguac gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96456
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB46447

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucguccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96457
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB46458

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcaaccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg gcugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96458
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB51961

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuucucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccugcg uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccacccagc gcugcaagca gcucgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca accccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96459
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB51962

<400> 96459

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cugguacgcc uucgccaugu cccgcggcuu cggcuccggc 840

aucuccaccu ccaacgcccc caugggcgag ugcgacgcca aguuccagac cccccagggc 900

ggcaucaaca ucucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aacuacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uccgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96460
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB51963

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96461
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
Hemagglutinin__InfluenzaA__ABB51964

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96462
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB53603

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaagaagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcacccu cuacuacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc accaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgacucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96463
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB53614

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96464
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96465
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96466
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB53696

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaacg ucugcaucug a 1701

<210> 96469
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB53707

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96470
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABB53718

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96471
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

augggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB53751

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccaucc uccgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB60007

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccgaccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96474
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96475
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB79731

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96476
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB79788

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96477
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB79799

<400> 96477

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cgcugcaaca ucugcaucug a 1701

<210> 96478
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB79810

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc ggcuccuacg ccugccgccg cggcuccguc 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96479
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABB79957

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gcacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96480
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gcacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96481
<211> 1698

<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABB79979

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96482
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB79990

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96483
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB80001

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96484
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 96485
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB80023

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96486
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABB80034

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gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caccgagggc 420

uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgccaccauc gacaccugca ucuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96489
<211> 1701
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<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96490
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96491
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB80159

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96492
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB80185

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96493
<211> 1701
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<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96494
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB80229

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

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<210> 96495
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96496
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96497
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96498
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96499
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 96500
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96501
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccauc 480

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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96504
<211> 1701
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<210> 96506
<211> 1701
<212> RNA
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<210> 96507
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96508
<211> 1701
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<210> 96509
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaacu ccaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96514
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABB82216

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccucc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 96515
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<212> RNA
<213> Artificial Sequence

<220>
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<210> 96516
<211> 1698
<212> RNA
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<210> 96517
<211> 1698

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABB83127

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccaccccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuc cgucgagucc 660

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaac 180

cucggcggca ucgccccccu cuaccucggc aacugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuc cgucgagucc 660

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gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<212> RNA
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<212> RNA
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uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggagucc cgccucaacc gcgaggagau caacggcauc 1560

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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96531
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<220>
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<210> 96533
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701

<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96536
<211> 1701
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<210> 96538
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<210> 96539
<211> 1701
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<210> 96540
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96541
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC02332

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaccugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccgac 480

uccggcuucu ucucccgccu caacuggcuc uacaaguccg gcuccaccua ccccguccuc 540

aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aacuccuucu ucucccgccu caacuggcuc uacaaguccg aguccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccaaccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcccccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacuccu ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacaucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96543
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC40522

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc accaagcgcc ccaagguccg cgaccaggag 720

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96544
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC40533

<400> 96544
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC40555

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucgucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagucc 420

uucaacugga ccggcgucac ccaguccggc ggcuccuacg ccugcaagcg cggcuccgac 480

aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccguccuc 540

aacgucacca ugcccaacaa cggcaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC40608

<400> 96546
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC40619

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96548
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC40631

<400> 96548
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96550
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC41725

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96552
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96553
<211> 1701

<212> RNA
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hemagglutinin__InfluenzaA__ABC41952

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC41964

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42014

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42114

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42125

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42136

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42147

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42158

<400> 96561
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42169

<400> 96562
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42180

<400> 96563
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42192

<400> 96564
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96565
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC42307

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 96566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42318

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 96567

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 96568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42461

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42494

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 96570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42505

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96571
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42516

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42527

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96573
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC42574

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96574
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96575
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96576
<211> 1701
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hemagglutinin__InfluenzaA__ABC42607

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABC42618

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42629

<400> 96578
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42640

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42651

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42662

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42673

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42684

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42695

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42706

<400> 96585

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accgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42717

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42728

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96588
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC42739

<400> 96588
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 96589
<211> 1698

<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 96591
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagucc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96593
<211> 1701
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hemagglutinin__InfluenzaA__ABC42794

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABC42816

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96596
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcauguc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96597
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hemagglutinin__InfluenzaA__ABC42849

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96598
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96599
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96600
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC42929

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96601
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC42940

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96602
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42951

<400> 96602
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96603
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC42962

<400> 96603

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uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__ABC42973

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 96606
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hemagglutinin__InfluenzaA__ABC43006

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96607
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<212> RNA
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hemagglutinin__InfluenzaA__ABC43028

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96608
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hemagglutinin__InfluenzaA__ABC43039

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96609
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<210> 96610
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC43061

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<210> 96611
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC43072

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucac caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96612
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC43083

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96613
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC43094

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96614
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43116

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96615
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43127

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43138

<400> 96616
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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cgcugcaaca ucugcaucug a 1701

<210> 96617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43149

<400> 96617
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABC43160

<400> 96618
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96620
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96621
<211> 1701
<212> RNA
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<400> 96621

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 96622
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96623
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96624
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC43508

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 96625
<211> 1701

<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC43519

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96626
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43530

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96627
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC43552

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96628
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC46554

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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uccaccaagc gcucccagca gaccaucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgccccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96629
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC46576

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cggcaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96630
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96631
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC50178

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96632
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABC50189

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96633
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC50200

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 96634
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC50211

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96635
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABC50222

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

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gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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<210> 96636
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96638
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96640
<211> 1701
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hemagglutinin__InfluenzaA__ABC50299

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96641
<211> 1701
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hemagglutinin__InfluenzaA__ABC50310

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<210> 96642
<211> 1701
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hemagglutinin__InfluenzaA__ABC50321

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<210> 96643
<211> 1701

<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABC67598

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96660
<211> 1701
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hemagglutinin__InfluenzaA__ABC67609

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96661
<211> 1701

<212> RNA
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hemagglutinin__InfluenzaA__ABC67620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96662
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96663
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96664
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC67653

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<210> 96665
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96666
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC67708

<400> 96666
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96667
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hemagglutinin__InfluenzaA__ABC67719

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96668
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 96669
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hemagglutinin__InfluenzaA__ABC67806

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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<210> 96670
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96671
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC67828

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96672
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC67839

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96673
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABC67850

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<210> 96674
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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<210> 96699
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96700
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96701
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<210> 96702
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<210> 96703
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hemagglutinin__InfluenzaA__ABC85798

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 96704
<211> 1701
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hemagglutinin__InfluenzaA__ABC85820

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<210> 96705
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hemagglutinin__InfluenzaA__ABC85831

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<210> 96706
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96707
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96710
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hemagglutinin__InfluenzaA__ABC85908

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hemagglutinin__InfluenzaA__ABC85919

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<210> 96713
<211> 1701
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hemagglutinin__InfluenzaA__ABC85941

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<210> 96714
<211> 1701
<212> RNA
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<220>
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<210> 96715
<211> 1701

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96717
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96718
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hemagglutinin__InfluenzaA__ABC86007

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96719
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hemagglutinin__InfluenzaA__ABC86018

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96720
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hemagglutinin__InfluenzaA__ABC86029

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<210> 96721
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hemagglutinin__InfluenzaA__ABC86040

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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<220>
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<400> 96722
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96731
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96733
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96734
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96735
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96736
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABD15592

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96737
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96738
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABD15614

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD15625

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccagaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgucaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacgcccagg ccuccggccg cgucaccguc 660

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaacgaca aguccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccaa cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD15702

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD15724

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD15746

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga gaugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD15757

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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96748
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96749
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD16303

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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<210> 96751
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD16325

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96753
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96756
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96757
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96758
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96759
<211> 1701
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<210> 96760
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96761
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD16549

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96763
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcaacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacu ccuuccagaa caaggagugg 300

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 96765

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuuca ucgagcgcuc caaggccuuc uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD16729

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

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cgcugcaaca ucugcaucug a 1701

<210> 96767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD16751

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<210> 96768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD16762

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96769
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96770
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD38134

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96771
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60779

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acaucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuaccccc gcuacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaccugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgccccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60801

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgccu cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD60812

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96775
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60823

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96776
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60845

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 96777
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60878

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96778
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD60889

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96779
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD60900

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96780
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD60911

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60922

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD60933

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cgucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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<210> 96783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60944

<400> 96783

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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<210> 96784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD60955

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccaagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc accuccugcu cccacaacgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

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aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96786
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96787
<211> 1701

<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaccucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96788
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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<210> 96789
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96792
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96793
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96794
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96796
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96797
<211> 1701
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96798
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABD61529

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96799
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABD61540

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96800
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD61757

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96805
<211> 1701

<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96806
<211> 1701
<212> RNA
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<210> 96807
<211> 1701
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<210> 96808
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96812
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96813
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96814
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABD77785

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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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<210> 96815
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD77807

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

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<210> 96816
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD77818

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

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<210> 96817
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96820
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<211> 1698
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<210> 96823
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<212> RNA
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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<211> 1701
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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96840
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79112

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcgccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg ccgcuccugg 420

cccgagcaca acaucgacau cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaacaag 540

uccuacguca acaagaagga gaaggagguc cucauccucu ggggcgucca ccacccccc 600

aacaucgaga accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucaaccgcgg caucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccuucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cugggacggc 1080

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uacgacuacc ccaaguucuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 96841
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79123

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca ucuccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuucc gcaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79134

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79145

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79156

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD79167

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD79178

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD79189

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacggcucca ucuccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96848
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 96849
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96850
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96851
<211> 1701
<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96852
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96854
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94745

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96855
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cccuccaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaacgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96856
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94778

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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ugccgcaucu gcaucuga 1698

<210> 96857
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94789

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94822

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96859
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94833

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccgacugcu accccuacga cgucccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94844

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD94855

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABD94866

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94877

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96866
<211> 1701
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hemagglutinin__InfluenzaA__ABD94910

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 96867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94921

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacggc ccccaccaga uccucgacgg caagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96868
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96869
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<210> 96870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94954

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96871
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD94965

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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<212> RNA
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<212> RNA
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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hemagglutinin__InfluenzaA__ABD95229

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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<212> RNA
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aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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hemagglutinin__InfluenzaA__ABE11900

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABE11942

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aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 96918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABE12078

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcucca ucugcaucug a 1701

<210> 96919
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96920
<211> 1698
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96921
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABE12623

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuucc gcaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96922
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABE12645

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 96923
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96925
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABE13471

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuucc gcaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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<210> 96931
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<212> RNA
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<212> RNA
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

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aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 96938
<211> 1701
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cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

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<210> 96939
<211> 1701
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<210> 96940
<211> 1698
<212> RNA
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<210> 96941
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<212> RNA
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uacgucaaca acaaggacaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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aucaucaccu ccaacgcccc caugggcgag ugcgacgcca agugccagac cccccagggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96942
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47583

<400> 96942
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96943
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<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96944
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hemagglutinin__InfluenzaA__ABF47605

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgcccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccuccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gacccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 96945
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABF47616

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 96946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47627

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47638

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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<210> 96948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47649

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 96949
<211> 1701

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47660

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 96950
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu ucgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

<220>
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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucaaccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucaaccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 96953
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hemagglutinin__InfluenzaA__ABF47715

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucaaccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 96954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47726

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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<210> 96955
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47737

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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<210> 96956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47748

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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<210> 96957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47770

<400> 96957
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47781

<400> 96958
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47792

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47803

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47814

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47825

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 96963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47836

<400> 96963

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 96964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF47847

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 96965
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<212> RNA
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hemagglutinin__InfluenzaA__ABF47858

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96966
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABF47869

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 96967
<211> 1698

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47880

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96968
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47891

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu cacccgcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 96969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47902

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 96970
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF47955

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucaccggcug gcuccucggc 240

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aacuccgaga acggcgccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 96971
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF60576

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accuggaccg gcgucaccca gaacggcggc uccggcgccu gccgccgcgg cuccgccgac 480

uccuucuucu cccgccucaa cuggcucacc aaguccggca acuccuaccc cacccucaac 540

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<210> 96972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABF60577

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagaaga cccgcggccu cuucgucgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acugcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa cuacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgccgccag cuccgcgaga acgccgagga caugggcucc 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacaucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

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<210> 96973
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABF60578

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gagaacaaca acaacaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggccaguccc gccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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gccgacgucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacaucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

ugcggcguca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 96974
<211> 1701
<212> RNA
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<220>
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ggcaacggca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuucucca uggacaagau cugcaacaac ccccaccgca uccucgacgg cgccaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg acuuccagaa cgagaagugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugca caccggccgc 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacaucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acaacgagua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 96975
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aucaacucca acggcaaccu caucgccccc cgcggcuacu acaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 96976
<211> 1701
<212> RNA
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accuacgacc acgacaucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 96977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF82651

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 96978
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF82662

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96979
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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<210> 96980
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1701
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<400> 96981

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<210> 96982
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 96983
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96984
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABF82830

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 96985
<211> 1698

<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF82841

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<210> 96986
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABF82852

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<210> 96987
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<212> RNA
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hemagglutinin__InfluenzaA__ABF82863

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<210> 96988
<211> 1698
<212> RNA
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<220>
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accgucaccc acgcccagga cauccucgag aaggcccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggucu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

ggcuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 96999

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97000
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97001
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABG26791

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcucaaggag 360

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uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

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<210> 97002
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABG26802

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97003
<211> 1701
<212> RNA
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<220>
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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97004
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26824

<400> 97004
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugcaaga ucugcaucug a 1701

<210> 97005
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26835

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97006
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26890

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccgacaucg gcuaccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

gucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26901

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaaguccg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccgacaucg gcuaccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26912

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97009
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG26945

<400> 97009
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97010
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

hemagglutinin__InfluenzaA__ABG26956

<400> 97010

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97011
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG37120

<400> 97011
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97012
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37131

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacggc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagu ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucacc cccaacaucg gcucccgccc cuggguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97013
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37142

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

ggcuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97014

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37164

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg acuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97015
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37175

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97016
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37186

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua caaggacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97017
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37197

<400> 97017

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga acggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97018
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG37208

<400> 97018
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97019
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG37230

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc caccagucca aguacaagua ccccgagcuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97020
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97021
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<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97022
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97023
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97024
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcugcaaca ucugcaucug a 1701

<210> 97025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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<210> 97026
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37307

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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<210> 97027
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG37318

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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hemagglutinin__InfluenzaA__ABG37329

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 97036
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97037
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97038
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97039
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97040
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97041
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97042
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABG37516

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97043
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97044
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 97045
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97046
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97047
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97048
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97049
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97050

<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47906

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47917

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG47928

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47939

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc cccuaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG47950

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc cucggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcaaca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG47961

<400> 97064

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugcg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47972

<400> 97065
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47983

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG47994

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97068

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48005

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48027

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97071
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48049

<400> 97071

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccacc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48060

<400> 97072
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 97073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48071

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48082

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccuccac 600

cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacgg caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97075
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABG48104

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97076
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABG48115

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 97078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48148

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48159

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48170

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 97081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48181

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

hemagglutinin__InfluenzaA__ABG48192

<400> 97082

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48203

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48214

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97085
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97086

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48247

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48269

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG48291

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucacc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 97089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48335

<400> 97089

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG48346

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcaa caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga ccgccccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97091
<211> 1701
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<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca aggucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97094
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67146

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

ggcuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67157

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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<210> 97096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG67168

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67179

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97098
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuucccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccgacaucg gcuaccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97099
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguaccgcua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97100
<211> 1701
<212> RNA
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<220>
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uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97101
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucgucg agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97102
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97103
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97104

<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67491

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 97105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67502

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67524

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc ccgcgccuac uccaacugcu accccuacga cgucccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcccc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 97107

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67557

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67568

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67579

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG67590

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG67601

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97114
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABG67612

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97115
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 97117
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67656

<400> 97118

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<210> 97119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67667

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG79941

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97122

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG79974

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

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uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG79985

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG79996

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 97125

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG80018

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97127
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG80029

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97128
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG80040

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcugcaaca ucugcaucug a 1701

<210> 97129
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc aacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABG80128

<400> 97136

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<212> RNA
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<400> 97137
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucuccaagcu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97153
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucauccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97154
<211> 1701
<212> RNA
<213> Artificial Sequence

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97157
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

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<210> 97158

<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97159
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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<210> 97160
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97161
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG80425

<400> 97161

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88289

<400> 97162
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

ggcuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88300

<400> 97163
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccga ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gacccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97164
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88311

<400> 97164
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gacccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88322

<400> 97165
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccau ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97166
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88333

<400> 97166
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucuccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88344

<400> 97167
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucuccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88355

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccgacaucg gcuaccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97169
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88366

<400> 97169
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97170
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88377

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88388

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97172
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88399

<400> 97172

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uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagucc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88410

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcugcaaca ucugcaucug a 1701

<210> 97174
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88421

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88432

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 97176

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88443

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97177
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88454

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccgcc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 97179

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 97180
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97181
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88498

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97182
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88509

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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<210> 97183
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88520

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97184
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97185
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABG88553

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccacc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga gaugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97187
<211> 1701
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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97188
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97189
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88597

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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97190
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88608

<400> 97190

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<210> 97191
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88619

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97200
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hemagglutinin__InfluenzaA__ABG88718

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97201
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacuc cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucacc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97202
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97203
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97204
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 97205
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABG88784

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97207
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG88806

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucu ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccucc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ABI20848

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcucaaggag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg cccacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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<212> RNA
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

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cccaaccaca ccgucaccaa gggcgucacc gucuccugcu cccacaacgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugcgcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

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<210> 97214
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI20881

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<210> 97215
<211> 1701
<212> RNA
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<220>
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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcaucuccu cccgcaucuc cauccacugg accaucguca agcccggcga cauccuccuc 780

aucaccucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI20903

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcaa ggucaccguc 660

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97217
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97218
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABI20925

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97219
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABI20936

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI20947

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI20958

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc uacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcugcaaca ucugcaucug a 1701

<210> 97222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI20969

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 97223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABI20980

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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97224
<211> 1701
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hemagglutinin__InfluenzaA__ABI20991

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABI21013

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97229
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<210> 97230

<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI21057

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<210> 97231
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21068

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccuccugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97242
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21233

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucaacu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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<210> 97243
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21244

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucaaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97244
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI21255

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<210> 97245
<211> 1701
<212> RNA
<213> Artificial Sequence

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97246
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21277

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI21376

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97255
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI21387

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97256
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucgu caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97257
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABI21409

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97258
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI21420

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc ggcuccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagucc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97259
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97260
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21442

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 97261
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21453

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcugcaaca ucugcaucug a 1701

<210> 97262
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI21464

<400> 97262

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97265
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<211> 1698
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hemagglutinin__InfluenzaA__ABI21563

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<400> 97269

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<212> RNA
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97271
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

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ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97275
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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<210> 97276
<211> 1701
<212> RNA
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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI30411

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<210> 97278
<211> 1701
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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI30620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97297
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 97298
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97301
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABI30810

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccu acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau caagaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97303
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucgcca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccu acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97304
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccu acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97305
<211> 1701
<212> RNA
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<400> 97305

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<210> 97306
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97307
<211> 1707
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABI36155

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc ucggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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<210> 97308
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguucau caacgucccc gaugguccu acaucgucga gaaggccaac 300

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<210> 97309
<211> 1707
<212> RNA
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hemagglutinin__InfluenzaA__ABI36177

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc ucggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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ggcaccuaca acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaucuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau caugauggcc ggccucuccc ucuggaugug cuccaacggc 1680

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hemagglutinin__InfluenzaA__ABI36406

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg gccucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagcuc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc ucggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggcc uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcgacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cauccgcaac 1500

ggcaccuaca acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaucuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau caugauggcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcgucug caucuga 1707

<210> 97311
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<212> RNA
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hemagglutinin__InfluenzaA__ABI36450

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accgucaccc acgcccagga cauccucggc aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

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cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaccuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

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ggcaccuaca acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 97312
<211> 1707
<212> RNA
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hemagglutinin__InfluenzaA__ABI49396

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accgucaccc acgcccagga cauccucggc aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc ucggcucccc cuccuucuuc 480

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cgcauggagu ucuucugggc cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<212> RNA
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hemagglutinin__InfluenzaA__ABI85000

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ggcaucgagg ucgucaacgc caccgagacc gucgagaccg ucaacaucaa gaagaucugc 180

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acuccgacaa cgccgccuuc ccccagauga ccaaguccua ccgcaacccc 540

cgcaacaagc ccgcccucau caucuggggc guccaccacu ccggcuccgc caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa guaccagcag 660

uccuucaccc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc uccuccucga ccccaacgac accgucaccu ucaccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cccccgcacc gucggcaagu gcccccgcua cgucaagcag 960

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cccgucaagc ucuccuccgg cuacaaggac aucauccucu gguucuccuu cggcgccucc 1620

ugcuuccucc uccucgccau cgccaugggc cucgucuuca ucugcaucaa gaacggcaac 1680

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<210> 97314
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABI92291

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<210> 97316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI92313

<400> 97316

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucaccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 97317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI92324

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccucccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 97320

<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97321
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97322
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97325
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97330
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97332
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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uccuccauca ugcgcuccga cgccuccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97334
<211> 1701
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hemagglutinin__InfluenzaA__ABI92511

<400> 97334

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<210> 97335
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97336
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97337
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97338

<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97339
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABI92588

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97340
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABI92599

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97341
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc uccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<211> 1701
<212> RNA
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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97360
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97361
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97362
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABI92863

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97364
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97365
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97368
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

aucggcgucc agcgcgccau cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1701
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<400> 97377

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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<210> 97378
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97379
<211> 1701
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<210> 97380
<211> 1701
<212> RNA
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucauccucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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<211> 1698
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<210> 97388
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABI95261

<400> 97388

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagaucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97397
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABJ09173

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97398
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABJ09184

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97399
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97400
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97401
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09217

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97402
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABJ09228

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97403
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09239

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97404
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09250

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cauccaccac 600

cccuccaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacgag 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97405
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<212> RNA
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hemagglutinin__InfluenzaA__ABJ09261

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97406
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABJ09272

<400> 97406

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uccuccucca ccggccgcau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97407
<211> 1701
<212> RNA
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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97408
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97409
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09316

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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cgcugcaaca ucugcaucug a 1701

<210> 97410

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09338

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 97411
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09349

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucauccag 180

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<210> 97412
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABJ09360

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 97413
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ABJ16620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97418
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<210> 97419
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABJ16664

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<210> 97420
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97421
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97422
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<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ABJ16730

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cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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<210> 97424
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABJ16741

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<210> 97425
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABJ16752

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97426
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABJ16763

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97427
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABJ16774

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<210> 97428

<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABJ16785

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gacugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gacaagaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagcgccgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1701
<212> RNA
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ABJ53515

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cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97436
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<212> RNA
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hemagglutinin__InfluenzaA__ABK39962

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaagacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97437
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97438
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97439
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuacuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97440
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABK40017

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97441
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABK40028

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucac cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

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<210> 97442
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABK40039

<400> 97442

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

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uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

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<210> 97443
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABK40050

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

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uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<211> 1701
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<210> 97460
<211> 1698
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<210> 97464

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<210> 97466
<211> 1701
<212> RNA
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<210> 97467
<211> 1698
<212> RNA
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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97468
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABK79970

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cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97470
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97471
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABK80025

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97472
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABK80036

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97473
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABK80047

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

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<210> 97474
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABK80058

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97475
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97484
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97486
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97489
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<210> 97490
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

caguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cauccgcaac 1500

ggcaccuaca acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau caugaucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 97499
<211> 1707
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABL07030

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc ucggcucccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucugggc cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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ggcaccuaca acuacccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

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<210> 97500

<211> 1707
<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcuccg aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuucg ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccaaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<210> 97501
<211> 1707
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABL31766

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc ucggcucccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucugggc cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ggcaccuaca acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

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<210> 97502
<211> 1707
<212> RNA
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<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc uccgcucccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ggcaccuaca acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 97503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABL67165

<400> 97503

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccuccggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97504
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABL67176

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97505
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABL67187

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cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 97506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABL67209

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgcccgcc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ucuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gaaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97507
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hemagglutinin__InfluenzaA__ABL67253

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97508
<211> 1701
<212> RNA
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccuccuu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97509
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 97510
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97511
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 97512
<211> 1701
<212> RNA
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<220>
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<210> 97513
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97514
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABL67330

<400> 97514

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97515
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 97516
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97517
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97518

<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97519
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97520
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 97522
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1707
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaugguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac gagaucguca agaagggcga cuccaccauc 840

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<210> 97528
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABM22026

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<210> 97529
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<210> 97530
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97534
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97536

<211> 1701
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<211> 1701
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hemagglutinin__InfluenzaA__ABM22136

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97538
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ABM22147

<400> 97538
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccu acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22158

<400> 97539

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97540
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22169

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97541
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22180

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22191

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ABM22202

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22213

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22224

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22235

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccaucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22268

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gaaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22279

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gacugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcggcugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gaaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97549
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABM22290

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 97550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22301

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22312

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97552
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM22323

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22334

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97554

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22345

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22356

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM22367

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97557
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM66864

<400> 97557

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM66886

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM66897

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 97560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM66908

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM66919

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM66930

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97563
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97564
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97565
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97566
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 97567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM66985

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM66996

<400> 97568

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<210> 97569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM67018

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97571
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABM67029

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu uccgcauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97572

<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97573
<211> 1707
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABM90467

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc ucggcucccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

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cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ggcaccuaca acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau caugaucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 97574
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM90511

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cuccaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ggcaccuaca acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau caugaucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<210> 97575
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABM90533

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cuccaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ucccuccagu gccgcaucug caucuga 1707

<210> 97576
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABM90544

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

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ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cuccaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ucccuccagu gccgcaucug caucuga 1707

<210> 97577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50900

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50917

<400> 97578
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50928

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABN50940

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucuccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg aggacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABN50951

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gaaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50962

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50973

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50984

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABN50995

<400> 97585
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97586
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABN51043

<400> 97586

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97587
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABN51054

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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97588
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagaa guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcac caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gacugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 97589
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABN51077

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 97590

<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABN51088

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 97591
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABN51099

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<210> 97592
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 97593
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<400> 97593

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagga cgagaccugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caccgagggc 420

uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

uccggcuucu ucucccgccu caacuggcuc accaaguccg gcuccaccua ccccguccuc 540

aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccacca accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcacc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga ccucgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 97594
<211> 1701
<212> RNA
<213> Artificial Sequence

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccacca accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97595
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97597
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97598
<211> 1701
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aaccccgagu gcgaguccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97599
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 97600
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<212> RNA
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<220>
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgaga accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97601
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<212> RNA
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hemagglutinin__InfluenzaA__ABO32656

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97602
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97603
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97604
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABO32692

<400> 97604

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<210> 97605
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97606
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO32762

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97607
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97608

<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO32790

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97610
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 97611
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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97613
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97614
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97615
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABO32871

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97617
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 97618
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97620
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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97622
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABO32948

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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hemagglutinin__InfluenzaA__ABO32959

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucaagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97626

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucuccgagc gccccaaggu ccgcgaccag 720

aagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ABO33006

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ABO33025

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<210> 97629
<211> 1701
<212> RNA
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<210> 97630
<211> 1701
<212> RNA
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<210> 97631
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABO33058

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<210> 97632
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

gaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<210> 97638
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<210> 97639
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hemagglutinin__InfluenzaA__ABO38065

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<210> 97640
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABO38076

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<210> 97641
<211> 1701
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<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

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<211> 1689
<212> RNA
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ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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aagcgcucca cccccgacau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

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<212> RNA
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<210> 97644

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<212> RNA
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<212> RNA
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<210> 97646
<211> 1689
<212> RNA
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<210> 97647
<211> 1698
<212> RNA
<213> Artificial Sequence

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<400> 97647

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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hemagglutinin__InfluenzaA__ABO38329

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccgcc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gccuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacau cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccaag aagggcggcu ccuaccccaa gcucaagaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

aacuccaagg accagcagac ccucuaccag aacgagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccgaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau cauguucgag 780

gccaacggca accucgucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97650
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cgucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgaga accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97651
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aacggcaacc ucaucgcccc cugguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaagcaca acaccaccaa gggcgucacc gccgccugcu cccacgccgg caaguccucc 480

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uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

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accggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<212> RNA
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hemagglutinin__InfluenzaA__ABO38417

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97656
<211> 1689
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hemagglutinin__InfluenzaA__ABO38712

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

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gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggacggcug gacccagcac 420

accaccuccg gcggcuccaa ggccugcgcc gucuccggca aguccuccuu cuuccgcaac 480

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cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgaccg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacaac 1380

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uaccacaagu gcgacgacga gugcaugucc uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

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<212> RNA
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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

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ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggacggcug gacccagcac 420

accaccuccg gcggcuccaa ggccugcgcc gucuccggca aguccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagcgcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgaccg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cggcaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

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aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugucc uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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ugcaucuga 1689

<210> 97658
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABO44046

<400> 97658

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

gagaccgacg gcggcuccaa ggccugcgcc gucuccggca aggccuccuu cuuccgcaac 480

auggucuggc ucaccaagcg cggccccaac uaccaggucg ccaagcgcuc cuacaacaac 540

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cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucga gucccgcaug 720

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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acccagaagg ccuucgaccg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

auccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcguc 1680

ugcaucuga 1689

<210> 97660
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97661
<211> 1689
<212> RNA
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hemagglutinin__InfluenzaA__ABO44090

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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

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aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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<210> 97662

<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABO44101

<400> 97662
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cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

aagaccgacg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

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aucaugaucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 97663
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABO44123

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccaag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaagcu cgagcgccgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97664
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO44134

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97665
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO52071

<400> 97665

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97666
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO52225

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcucaaggag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97667
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO52236

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcacuuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccucgg cggccgcaug 720

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacgcc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cuacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 97668
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABO52247

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

aagaccgacg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagcgcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

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gaguucuccu ggacccuccu cgacgucugg gacaccaucu ccuucgaguc caccggcaac 780

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 97669
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABO52258

<400> 97669
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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caagugcucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 97670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABO52280

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aacuccgaga acggcaucug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97671
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABO52302

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gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

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ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcaucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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<210> 97672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABO52313

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97673
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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97674
<211> 1701
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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aacgucacca ugcccaacaa cgacaacucc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97675
<211> 1701
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 97676
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABO52368

<400> 97676

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 97677
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABO52797

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<210> 97678
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABP49217

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<210> 97679
<211> 1698
<212> RNA
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97680

<211> 1701
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gccaacggca accucaucgc ccccuggcac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97681
<211> 1701
<212> RNA
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aaccccgagu gcgaguccccu ccucuccgag cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucacca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acaccacccg cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaacaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucaagg accagcagac ccucuaccag aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucaagcccg gcgacaccau cauguucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97682
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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97683
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABP49349

<400> 97683

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cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 97684
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABP49360

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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<210> 97685
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABP49371

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<210> 97686
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABP49382

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

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<210> 97687
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABP49393

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97688
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg gcgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 97689
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97690
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABP49426

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97691
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

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aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

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<210> 97692
<211> 1701
<212> RNA
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<220>
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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97693
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABP49459

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uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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<210> 97694
<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABP49470

<400> 97694

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accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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<210> 97695
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<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

uucaacugga ccggcgucac ccagaacggc ggcuccuccu ccugcaagcg cggccccgac 480

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ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97696
<211> 1701
<212> RNA
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acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagga cgagaccugg 300

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97697
<211> 1701
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gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97698

<211> 1701
<212> RNA
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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acaucacccg cggcgucacc gccgccugcu cccacgccaa gaaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aagaucgagg accagcgcac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 97699
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABQ01322

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccgccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97700
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABQ01333

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97701
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 97701

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<210> 97702
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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ugcaucuga 1689

<210> 97703
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABQ01366

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

uucaacugga ccggcgucac ccagaacggc ggcuccuccg ccugcaagcg cggccccgac 480

aacggcuucu ucucccgccu caacuggcuc uacaaguccg gcuccaccua ccccguccag 540

aacgucacca ugaccaacaa cgacaacucc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccgaccuc uacguccagg ccuccggcaa ggucaccguc 660

uccaccaagc gcucccagca gaccaucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97704
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97706
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABQ44416

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg aggacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 97707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABQ44427

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97708
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABQ44438

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

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gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggacggcug gacccagcac 420

accaccuccg gcggcuccaa ggccugcgcc gucuccggca aguccuccuu cuuccgcaac 480

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacaac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugucc uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

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ugcaucuga 1689

<210> 97709
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABQ44460

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gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 97710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABQ44471

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagcgcac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gaccccccag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cccuccacca accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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aacaucgagg accagcgcac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgaggccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<211> 1698
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<210> 97718
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 97737
<211> 1701
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97738
<211> 1701
<212> RNA
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gcgcgagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg agcagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 97739
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABS00326

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<210> 97740
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABS49899

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<210> 97741
<211> 1701
<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97742
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABS49965

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaucucccuc uacgcccagg cccccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aucaacugca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccuccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97743
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS49976

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acaacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97744
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS49987

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa caugaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97745
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS49998

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucauca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS50009

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS50020

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS50031

<400> 97748

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS50042

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97750
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABS50053

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97751
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucucccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97752

<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ABS50075

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97753
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABS71665

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

ucccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97754
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS71666

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

ucccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgccaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97755
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS71667

<400> 97755

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

ucccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgccaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acaucuccgu cgucuccucc 660

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<210> 97756
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71668

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

ucccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgccuccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<210> 97757
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71669

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97758
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71671

<400> 97758
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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aucaucaacu ccaacgcccc cauggacgag ugcgacgcca agugccagac cccccagggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97759
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71672

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cgccucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgccc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc ccgcuacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaacu ccaacgcccc cauggacgag ugcgacgcca agugccagac cccccagggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97760
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71673

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggccg cuccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacaccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguucu ccaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 97761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71674

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71675

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71676

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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaucauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71677

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aucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABS71679

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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97766
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABS71680

<400> 97766

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 97767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABS71682

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97768
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABU80177

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97769
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97770

<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABU80320

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97771
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABU80331

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABU80400

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aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 97773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABU92572

<400> 97773

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97774
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97775
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97776
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97777
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97778
<211> 1701
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 97779
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97780
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97782
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 97783
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97784
<211> 1701
<212> RNA
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<210> 97785
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97786
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97787
<211> 1701
<212> RNA
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<210> 97788

<211> 1701
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<210> 97789
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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97821
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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accgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<400> 97827

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<210> 97828
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97832
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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hemagglutinin__InfluenzaA__ABU92649

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<211> 1701
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<210> 97836
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97837
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 97841
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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<210> 97843
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97844
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97845
<211> 1701
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<210> 97846
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97848
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97849
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97850
<211> 1701
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<210> 97851
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97852
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97853
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97854
<211> 1701
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 97855
<211> 1701
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<210> 97856
<211> 1701
<212> RNA
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<210> 97858
<211> 1701
<212> RNA
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<210> 97859
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97869
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97871
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97872
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97874
<211> 1701
<212> RNA
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<400> 97874

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<210> 97875
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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<210> 97877
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 97878

<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97879
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97880
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97881
<211> 1701
<212> RNA
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<210> 97882
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97883
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97906
<211> 1701
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<210> 97907
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97915
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97938
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97939
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hemagglutinin__InfluenzaA__ABU92757

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg ccgcggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 97940
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<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 97941
<211> 1701
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aucuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 97942
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 97943
<211> 1698
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<220>
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hemagglutinin__InfluenzaA__ABV29579

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABV29612

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97945
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABV29634

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgaggccccc 300

ucccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 97946
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABV29645

<400> 97946

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 97951
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<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97952
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 97953
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABV29733

<400> 97953

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

ucccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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<210> 97961
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABV29832

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<210> 97962
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABV29865

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 97963
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hemagglutinin__InfluenzaA__ABV29876

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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<220>
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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 97968

<211> 1698
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hemagglutinin__InfluenzaA__ABV29953

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<210> 97969
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hemagglutinin__InfluenzaA__ABV29964

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<210> 97970
<211> 1698
<212> RNA
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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<210> 97976
<211> 1701
<212> RNA
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<210> 97977
<211> 1701
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<210> 97978
<211> 1698
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<212> RNA
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hemagglutinin__InfluenzaA__ABV30140

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<212> RNA
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hemagglutinin__InfluenzaA__ABV30162

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<210> 97985
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<212> RNA
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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ABV30283

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ABV30294

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<210> 97993
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<212> RNA
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<220>
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cccaaccaca ccgucaccgg cggcuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cucccgcucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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hemagglutinin__InfluenzaA__ABV30382

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98002
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABV30404

<400> 98002
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaagugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 98003
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABV30415

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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagucc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 98004

<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 98005
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98006
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABV30448

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98007
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABV30459

<400> 98007

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgaggccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABV30470

<400> 98008
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98009
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABV30492

<400> 98009
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg aucaucugga ucuccuucgc caucuccugc 1620

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<210> 98035
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ABW36190

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<210> 98040

<211> 1698
<212> RNA
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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<210> 98047
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<212> RNA
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hemagglutinin__InfluenzaA__ABW36300

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<210> 98048
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW36311

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ABW39839

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98057
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW39872

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 98058

<211> 1698
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccacaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98059
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98060
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<212> RNA
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hemagglutinin__InfluenzaA__ABW39905

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98061
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW39927

<400> 98061

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABW39938

<400> 98062
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98063
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW39949

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<210> 98064
<211> 1698
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 98076

<211> 1698
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<210> 98078
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hemagglutinin__InfluenzaA__ABW40125

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<210> 98079
<211> 1701
<212> RNA
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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98082
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98083
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98084
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW40202

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 98085
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW40213

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98086
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABW40224

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98087
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ABW40235

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98088
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW40246

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98089
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98090
<211> 1701
<212> RNA
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<220>
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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98091
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hemagglutinin__InfluenzaA__ABW40312

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggccg cuccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW40323

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98093
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW40334

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cucccgcucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98094

<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW40345

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98095
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW40356

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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hemagglutinin__InfluenzaA__ABW40499

<400> 98108

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<400> 98115

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<210> 98117
<211> 1698
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<212> RNA
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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ABW40620

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98121
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ABW40675

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<212> RNA
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hemagglutinin__InfluenzaA__ABW71294

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<210> 98126
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW71305

<400> 98126

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 98151
<211> 1698
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<400> 98151

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ucuccaacgc cuccaugggc gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98153
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98154
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgucccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga cuccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98155
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABW81508

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABW81509

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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<210> 98157
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABW81511

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ABW81516

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<210> 98165
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<212> RNA
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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ABW81520

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<211> 1698
<212> RNA
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ABW86442

<400> 98187

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccuccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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<210> 98201
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98203
<211> 1698
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 98212
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cucccgcucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cucaagggcg ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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hemagglutinin__InfluenzaA__ABW91482

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<212> RNA
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hemagglutinin__InfluenzaA__ABW91570

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcguccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gacuaccaga aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ABY81349

<400> 98306

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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<400> 98313

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACC61975

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98330
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACD56324

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaagaacau ccucgagaag acccacaacg gccgccucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcaacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcuccucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa ggaguccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaucga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagcgca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98331
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85187

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaagga cgaggccgag 600

cagcgcgccc ucuaccagga ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98332
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85198

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagcgcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaccga cgaggccgag 600

cagcgcgccc ucuaccagga ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccuccg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgaccg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucggcuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98333
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85209

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

augguguggc ucacccagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98334
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85220

<400> 98334
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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggcg agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaagga cgaggccgag 600

cagcgcgccc ucuaccagaa cgucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgaga aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98335
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACD85242

<400> 98335

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcucccuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccagaagg ccuucgacgg caucaccaac aaggucaacu ccaugaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

gacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgag 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacaacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucauggucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98336
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85253

<400> 98336
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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

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gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacaacc ucugcuaccc cggcucccuc aacgaguacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggcg agcccuccuu cuuccgcaac 480

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cucgucgucc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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acccaguucg agaccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgag 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucauggucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACD85440

<400> 98337
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98354
<211> 1701
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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98358
<211> 1701
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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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<210> 98359
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACF22265

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<210> 98360
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACF22276

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<210> 98361
<211> 1701
<212> RNA
<213> Artificial Sequence

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98362
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<210> 98364
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<210> 98365
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<210> 98366
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98368
<211> 1698
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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucga gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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<210> 98370
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aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

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uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca ccccuccaac 600

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aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 98375
<211> 1698
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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucaccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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<210> 98378
<211> 1689
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<400> 98378

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<210> 98381
<211> 1701
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<210> 98382
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<211> 1701
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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

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accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucaucggcug gcuccucggc 240

aaccccgagu gcgacucccu ccuccccgcc cgcuccuggu ccuacaucgu cgagaccccc 300

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uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca ccccuccucc 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaugugcg acgaguucau caacgucccc gaguggguccu acauggucga gaaggccaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcuccuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacgccuacc ccaccaucaa gcgcuccuac 540

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gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucauccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucguccgca ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98415
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<210> 98416
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACI06129

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98417
<211> 1701
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hemagglutinin__InfluenzaA__ACI06130

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98418
<211> 1701
<212> RNA

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98419
<211> 1701
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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98420
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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98421
<211> 1701
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hemagglutinin__InfluenzaA__ACI06135

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<210> 98422
<211> 1701
<212> RNA
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<210> 98423
<211> 1701
<212> RNA
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<210> 98424
<211> 1701
<212> RNA
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<210> 98433
<211> 1701
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<210> 98434
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<210> 98435
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<210> 98436
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACI06151

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<210> 98437
<211> 1701
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<210> 98438
<211> 1701
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<210> 98439
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uccacccgcc gcucccagca gaccaucauc cccaacaucg agucccgccc cuggguccgc 720

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<211> 1701
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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 98456
<211> 1701
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hemagglutinin__InfluenzaA__ACI06173

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccacca accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucgag 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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gacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccacca accaggagca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 98458
<211> 1701
<212> RNA
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acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98459
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98460
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccacccgcc gcucccgcca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98461
<211> 1689
<212> RNA
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<220>

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<400> 98461

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cgcuacuccc ucugcuaccc cggcucccuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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<210> 98462
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACI25746

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98464
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACI25768

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uccacccgcc gcucccagca gaccaucauc cccaacaucu gguccccgccc cuggguccgc 720

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aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98466
<211> 1701
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98467
<211> 1701
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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98468
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACI26274

<400> 98468

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gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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ugcaucuga 1689

<210> 98469
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACI26307

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98470
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACI26362

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98471
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98472
<211> 1701
<212> RNA

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1698
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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hemagglutinin__InfluenzaA__ACI26450

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<210> 98479
<211> 1698
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaagcaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcgccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaagcaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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<210> 98515
<211> 1701
<212> RNA
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<210> 98516
<211> 1683
<212> RNA
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<220>
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<210> 98517
<211> 1704
<212> RNA
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hemagglutinin__InfluenzaA__ACJ68607

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<211> 1704
<212> RNA
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hemagglutinin__InfluenzaA__ACJ68609

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ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccucc gccgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

aucaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaugcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucggcua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cuggcccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccucc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

ggcggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccguc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ACK99007

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 98525
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99008

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98526
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99009

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ACK99033

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cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98542
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACK99034

<400> 98542
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98543
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99035

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccgc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc uccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98544
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99421

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc ggcuccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaaguccg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucacc cccaacaucg gcucccgccc cuggguccgc 720

ggccaguccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98545
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99432

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ggcuaccacg ccaacaacuc caccgagaag aucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccau ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaccaa gggccccaac uaccccgucg cccagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucuac 660

aagcgcucca uccccgagau cgccgcccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacaacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACK99443

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccgccugcu cccacaacgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa cauccccucc 1020

guccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACK99465

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccaag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaagc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACK99476

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98549
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACL12063

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccagcuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98552
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98554
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACL12184

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98556
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACL12195

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98558
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 98558

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcaucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACL12261

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccgccugcu cccacaaggg ccgcuccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98562
<211> 1689
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACN32272

<400> 98562
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ggcuaccacg ccaacaacuc caccgagaag aucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccau ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaccaa gggccccaac uaccccgucg cccagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa cgucggcacc uacgucuccg ccuccaccuc cacccucuac 660

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gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

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accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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uaccacaagu gcgacaacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 98563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACN32283

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACN32474

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgaggucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98565
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN32501

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98566
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACN32534

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacgg caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98567
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98568
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccgagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98569
<211> 1698
<212> RNA
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<220>

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<400> 98569

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cggcuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98570
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN32815

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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ugccgcaucu gcaucuga 1698

<210> 98571
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN32826

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc aacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 98572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98573
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACN32870

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98574
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98578
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 98579
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98580
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN32958

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<210> 98581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccagg uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagcuccg cuccggcaag 840

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98582
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98583
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 98584
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98585
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98586
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98587
<211> 1701
<212> RNA
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<220>

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<210> 98588
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACN33057

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98589
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACN33068

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

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<210> 98590
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 98591
<211> 1698
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<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98592
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98593
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<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98594
<211> 1698
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACN33145

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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<210> 98596
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN33156

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca caucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98601
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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ACN42992

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98604
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98605
<211> 1701
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<220>

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<400> 98605

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98606
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACN43036

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98607
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98608
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcggcucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98609
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 98610
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN43080

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98611
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACN72617

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cucaacggca aggccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

gacuccaaga acggcgccug cuaccccggc gaguucgccg acuacgagga gcuccgcgag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg agaccaccaa gggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccacccccc 600

accgacuccg accagcagac ccucuaccag aacaagcaca ccuacgucuc cgucggcucc 660

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gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaacaaggg cuccaacucc 840

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ggcgcccuca agggcaaccu ccccuuccag aacguccacc ccaucaccau cggcgagugc 960

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uacaacuacc cccgcuacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 98612
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACN72632

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gaccucuuca ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgag 360

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uucaacugga ccggcgucac ccagaacggc ggcuccuccg ccugcaagcg cggccccaac 480

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ugcccccacu acaucaagca gaacacccuc aagcucgcca ccggcaugcg caacaucccc 1020

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ggcaugguca acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagcg cuacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacuccugca uggaguccau ccgcaacggc 1500

accuacgacc acaacgagua ccgcgacgag gccgucaaca accgcuucca gaucaagucc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 98613
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hemagglutinin__InfluenzaA__ACN76478

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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<210> 98614
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgaggucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98615
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98616
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 98618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO36331

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACO36342

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98620
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO36364

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98621
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98622
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ACO36397

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<220>

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<400> 98623

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98624
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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98625
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<212> RNA
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hemagglutinin__InfluenzaA__ACO36430

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 98626
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACO36441

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98627
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACO36452

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98628
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO36463

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98629
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98632
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98634
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98636
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ACO94738

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 98655
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98659
<211> 1701
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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaagggcaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaacacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98662
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98664
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98666
<211> 1701
<212> RNA
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<210> 98667
<211> 1701
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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98668
<211> 1701
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hemagglutinin__InfluenzaA__ACO95153

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 98669
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagacccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98670
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 98673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO95226

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98674
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO95248

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98675
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACO95270

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98698
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<210> 98699
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hemagglutinin__InfluenzaA__ACP44269

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ACQ63223

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<210> 98706
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACQ63239

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<210> 98707
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98708
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACQ63257

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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<210> 98709
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98710
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98711
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98712
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98713
<211> 1698
<212> RNA
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<220>

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<400> 98713

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacgucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcgacc agaacacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98714
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ73386

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98715
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ73387

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ73555

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca agcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76294

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76314

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76317

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 98720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76318

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76326

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACQ76336

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98723
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98724
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76365

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98725
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76370

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76376

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76383

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76389

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ76401

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACQ76405

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98731
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<400> 98731

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 98732
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACQ77601

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccauguccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaagcu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 98734
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ84451

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ84457

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 98736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ84477

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

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<210> 98737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ89900

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 98738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ89904

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca agggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ89905

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ99607

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98742
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACQ99608

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ99609

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACQ99611

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACQ99614

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACQ99616

<400> 98746
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98751
<211> 1701
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<210> 98752
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACQ99622

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<210> 98753
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR01014

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08419

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98755
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR08429

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98756
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR08439

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08449

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98758
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08459

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 98759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08528

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 98760
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08530

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 98761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08531

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08533

<400> 98762
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08535

<400> 98763
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08536

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08537

<400> 98765
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08538

<400> 98766
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR08539

<400> 98767

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08540

<400> 98768
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08542

<400> 98769
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98770
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08543

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98771
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98772
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR08546

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08547

<400> 98774

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 98775
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08548

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 98776
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08549

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 98777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08550

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98778
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08551

<400> 98778
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08552

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08553

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR08554

<400> 98781
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09365

<400> 98782
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09366

<400> 98783
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09367

<400> 98784
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR09368

<400> 98785

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09369

<400> 98786
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09370

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09371

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09373

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98790
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09374

<400> 98790
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09375

<400> 98791
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98792
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09376

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09377

<400> 98793
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98794
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR09395

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98795
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR09396

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98796
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR10186

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98797
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR10222

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98798
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR10223

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98799
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR15183

<400> 98799
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98800
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR15194

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aacggcaacc ucaucgcccc ccgcuacgcc uucgcccucu cccgcggccu cggcuccggc 840

aucaucaacu ccaacgcccc cauggacaag ugcgacgcca agugccagac cccccagggc 900

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caaccgcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<400> 98803

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgucc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 98805
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaugaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<220>
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hemagglutinin__InfluenzaA__ACR15293

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98807
<211> 1698
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hemagglutinin__InfluenzaA__ACR15304

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ACR15315

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auccgcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 98809
<211> 1698
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<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaugucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98810
<211> 1698
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 98811
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 98812
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 98813
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR15392

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcaccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98814
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR15403

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98815
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR15414

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98816
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR15425

<400> 98816
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 98824
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hemagglutinin__InfluenzaA__ACR15524

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 98827
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 98828
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98829
<211> 1701
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hemagglutinin__InfluenzaA__ACR15579

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 98830
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 98831
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACR15601

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98832
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR18920

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 98833
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR18975

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98834
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18976

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98835
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18978

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98837
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR18979

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98838
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18981

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98839
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR18982

<400> 98839

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98840
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR18988

<400> 98840
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98841
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18991

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaaccgcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18993

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR18995

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR23302

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR33743

<400> 98845
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR38821

<400> 98846

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR38822

<400> 98847
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98848
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38823

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98849
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR38824

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98850
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38825

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38826

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38827

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38828

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 98854
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38829

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98855
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR38830

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98856
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39354

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98857
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 98857

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39403

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98859
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39413

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39423

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39433

<400> 98861
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39443

<400> 98862
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39453

<400> 98863
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39463

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39473

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR39483

<400> 98866
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR39493

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98868
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40288

<400> 98868
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40298

<400> 98869
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40308

<400> 98870
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacaucuacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40318

<400> 98871
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40328

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR40338

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR40348

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR40358

<400> 98875

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98876
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40378

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98877
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR40388

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98878
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR46986

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98879
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR46988

<400> 98879
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98880
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR46989

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR46990

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98882
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR46992

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98883
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR46993

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98884
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR46994

<400> 98884
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 98885
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR47006

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98886
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR49281

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98887
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR49282

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98888
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR49283

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98889
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR49288

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR49290

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98891
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR49291

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR49293

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 98893
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR49295

<400> 98893

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 98894
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR50993

<400> 98894
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccuca uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98895
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR50995

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98896
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR51005

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98897
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR51015

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98898
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR51025

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98899
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR51035

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98900
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR51045

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98901
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR51055

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98902
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACR51065

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98903
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52368

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98904
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52378

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52408

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52418

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR52428

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98909
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR52438

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98910
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52448

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98911
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR52458

<400> 98911

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98912
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR52468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR52478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98914
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR52488

<400> 98914
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98915
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR54045

<400> 98915
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98916
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR54047

<400> 98916
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR54964

<400> 98917
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR54974

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR54984

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR54994

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR55004

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98922
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR56380

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR56390

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 98924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR56400

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98925
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR56410

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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hemagglutinin__InfluenzaA__ACR56420

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 98927
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 98929
<211> 1698
<212> RNA
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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hemagglutinin__InfluenzaA__ACR61666

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<210> 98932
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<212> RNA
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hemagglutinin__InfluenzaA__ACR61677

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR61688

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR61699

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 98935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR67170

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 98936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67171

<400> 98936

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR67172

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR67177

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 98939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR67181

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98940
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67183

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67184

<400> 98941
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67185

<400> 98942
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67186

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67187

<400> 98944
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67188

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67189

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACR67190

<400> 98947

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR67192

<400> 98948
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

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<220>
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hemagglutinin__InfluenzaA__ACR67193

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gagugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98950
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACR67195

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR67197

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACR67198

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98953
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR67199

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 98954
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACR67244

<400> 98954

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 98955
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACR67254

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 98956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR77438

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR77448

<400> 98957
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98958
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR77458

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucgac aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACR77468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR77478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR77488

<400> 98961
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR77498

<400> 98962
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 98963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR83525

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACR83538

<400> 98964
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccucuccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 98965

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 98966
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98967
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACS14686

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98968
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACS14696

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 98969
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACS14706

<400> 98969
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 98970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS14716

<400> 98970
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 98971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS14726

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS14736

<400> 98972

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS27189

<400> 98973
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS27199

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS27209

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98976
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS27219

<400> 98976
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS27229

<400> 98977
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS27239

<400> 98978
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccauguccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS27249

<400> 98979
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98980
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACS27775

<400> 98980
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98981
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACS34705

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS34966

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACS34967

<400> 98983

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caaguccccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 98984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS34968

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgaguccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caucuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS36632

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 98986
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS36645

<400> 98986
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 98987
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACS45035

<400> 98987
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACS50084

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98989
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 98990
<211> 1701
<212> RNA
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<400> 98990

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 98991
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACS54259

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 98992
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACS54260

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 98993
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS54261

<400> 98993
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<210> 98994
<211> 1701
<212> RNA

<213> Artificial Sequence

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<210> 98995
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACS54301

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACS66821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgaggg ccuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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hemagglutinin__InfluenzaA__ACS77926

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ACS77936

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<210> 99001
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<210> 99002
<211> 1701
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hemagglutinin__InfluenzaA__ACS77956

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99003
<211> 1701
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hemagglutinin__InfluenzaA__ACS77966

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99004
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99005
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99006
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 99006
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 99008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS78016

<400> 99008

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<210> 99009
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS78026

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaucaag 540

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<210> 99010
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACS78036

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ACS92569

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99013
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99014
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99015
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hemagglutinin__InfluenzaA__ACS92612

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99016
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hemagglutinin__InfluenzaA__ACT10307

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99017
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hemagglutinin__InfluenzaA__ACT10314

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99018
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT11057

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99019
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucaccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<212> RNA
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hemagglutinin__InfluenzaA__ACT15316

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaaggacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucauccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

cgccgcaaga agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

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hemagglutinin__InfluenzaA__ACT15320

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcauguc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

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aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ACT15322

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

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aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT15326

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<211> 1704
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT15328

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<210> 99026
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15330

<400> 99026

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

cgccgcaaga agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccacua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 99027
<211> 1707
<212> RNA
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hemagglutinin__InfluenzaA__ACT15332

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccacaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

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<210> 99028
<211> 1704
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT15336

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

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aacgucgucu ggcucaccaa gaaggacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<211> 1704
<212> RNA
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hemagglutinin__InfluenzaA__ACT15338

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggucu acaucgucga gaagaucaac 300

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gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucauccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca ggagggccgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

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aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgag 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 99031
<211> 1704
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT15342

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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auggaguucu ucuggaccau ccucaagccc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 99032
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15343

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggucu acaucgucga gaagaucaac 300

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gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<212> RNA
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hemagglutinin__InfluenzaA__ACT15345

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cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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<210> 99034
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15347

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccacaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcaag 1020

aaccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagcgcgcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccaccgcugc gacaacgagu gcauggaguc cguccgcaac 1500

ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaucuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 99035
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15349

<400> 99035
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaaggacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccacc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucauccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca ggaggagcgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 99036
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15351

<400> 99036
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcggcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccacaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcaag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caagcucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 99037
<211> 1704
<212> RNA
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<220>

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<400> 99037

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacucc gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacuc caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 99038
<211> 1707
<212> RNA
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hemagglutinin__InfluenzaA__ACT15355

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccacaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 99039
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT15357

<400> 99039
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccca gaaggacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucauccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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cuccagugcc gcaucugcau cuga 1704

<210> 99040
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT20200

<400> 99040
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT21466

<400> 99041
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ggcaacgaca acuccaccgc cacccccugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT21467

<400> 99042
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ggcuccgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 99043
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT21468

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 99044
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACT21469

<400> 99044

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 99045
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99046
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99047
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACT21507

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca agcgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99048
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT21508

<400> 99048
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99049
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 99050
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT21510

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gagugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99052
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99054
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99055
<211> 1701
<212> RNA
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<400> 99055

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99056
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT22035

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 99057
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT22036

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT22037

<400> 99058
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT22038

<400> 99059
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT22055

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT22504

<400> 99061
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT33122

<400> 99062

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT33123

<400> 99063
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

caguuccgca ucugcaucug a 1701

<210> 99064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT33125

<400> 99064
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36505

<400> 99065
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99066
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36649

<400> 99066
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc cgcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucaacu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

ucccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT36650

<400> 99067
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36652

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT36653

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36655

<400> 99070
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36658

<400> 99071
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT36659

<400> 99072
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACT36661

<400> 99073

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99074
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<212> RNA
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hemagglutinin__InfluenzaA__ACT36663

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99075
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACT36666

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99076
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<212> RNA
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hemagglutinin__InfluenzaA__ACT52687

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcuu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99077
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT54606

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT66146

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT66155

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT66162

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

caccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT67239

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 99082
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT68102

<400> 99083
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99084
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68103

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccucaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68104

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68105

<400> 99086
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cggcgaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68106

<400> 99087
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68107

<400> 99088
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68108

<400> 99089
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT68109

<400> 99090
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACT68110

<400> 99091

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68112

<400> 99092
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68113

<400> 99093
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99094
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68115

<400> 99094
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT68119

<400> 99095
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT79133

<400> 99096
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaagcuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99097
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT79143

<400> 99097
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99098
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT79153

<400> 99098

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT79163

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99100
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99101
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT79625

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucaa gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99102
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT79627

<400> 99102
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99103
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT82512

<400> 99103
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99104
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT82513

<400> 99104
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__ACT82514

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccaacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcuccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99106
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<212> RNA
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hemagglutinin__InfluenzaA__ACT82515

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99107
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT82516

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucauggu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99108
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT83795

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99109
<211> 1701
<212> RNA
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<220>

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<400> 99109

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 99110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT83815

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT83825

<400> 99111
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT83835

<400> 99112
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99113
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<212> RNA
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hemagglutinin__InfluenzaA__ACT83845

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99114
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT83855

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99115
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT83865

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT83875

<400> 99116

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT85999

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86009

<400> 99118
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86019

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99120
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT86029

<400> 99120
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99121
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACT86039

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86059

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99123
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACT86069

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86079

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86089

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACT86099

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99127
<211> 1701
<212> RNA
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<220>

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 99128
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACT86119

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaacuu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ACU12505

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ACU12582

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcaucaag 1560

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hemagglutinin__InfluenzaA__ACU13090

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ACU13093

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99151
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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<400> 99152

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99153
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99154
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99156
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACU16930

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagugccgca ucugcaucug a 1701

<210> 99157
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU16993

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99158
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACU17059

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<210> 99159
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACU17126

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99160
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU17187

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99161
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU17258

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU17389

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99163
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACU17450

<400> 99163

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99164
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU17521

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU27041

<400> 99165
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99166
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU27406

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 99167
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU27407

<400> 99167
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 99168
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99169
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99170
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99171
<211> 1704
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACU29999

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccagugcc gcaucugcau cuga 1704

<210> 99172
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU30019

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<210> 99174
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU30103

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99176
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU30112

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccca caugguccuc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 99177
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU30121

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU31124

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31143

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99180
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU31144

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 99181
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACU31145

<400> 99181

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99182
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31146

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99183
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31147

<400> 99183
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99184
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31148

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU31149

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31150

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31151

<400> 99187
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99188
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU31152

<400> 99188
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99189
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACU46644

<400> 99189
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcggca agccccucau ccuccgcgac ugccgcgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccaccacauc cacccccuca ccaucggcga gugccccaag 960

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa ccaccucgag 1260

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ucccuccagu gccgcaucug caucuga 1707

<210> 99190
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACU56924

<400> 99190
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99195
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<212> RNA
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<210> 99196
<211> 1701
<212> RNA
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<210> 99197
<211> 1701
<212> RNA
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<210> 99198
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccggcuucu ucucccgccu caacuggcuc accaaguccg gcuccaccua ccccguccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucaccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaacucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

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uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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<210> 99206
<211> 1698
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99214
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hemagglutinin__InfluenzaA__ACU80113

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caagaacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99215
<211> 1701
<212> RNA
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auggucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 99216
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 99217
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<400> 99217

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99218
<211> 1698
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99219
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACU80179

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 99220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU80190

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 99221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU80201

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 99222
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 99223
<211> 1698
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 99226
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99228
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACU80289

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<210> 99229
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 99254
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99256
<211> 1701
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aucgucaaga ccaucaccaa cgaccagacc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 99258
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99259
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACU80754

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99260
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACU80765

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99261
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99265
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99266
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<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99267
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 99268
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV04258

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 99269
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV04268

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99273
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99274
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV04318

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99275
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ACV04328

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99276
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<212> RNA
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hemagglutinin__InfluenzaA__ACV04338

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99277
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV04358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99278
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 99278

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99279
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV04378

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99280
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV04388

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99281
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV04398

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99282
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV04408

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99283
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV04489

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99284
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV04499

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99287
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99289
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 99290
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99291
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<212> RNA
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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 99292
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV04752

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucgag 240

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99293
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV04753

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99294
<211> 1701
<212> RNA
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guccccguca cccacuccgu caaccuccuc aaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggcgucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99295
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99296
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV33084

<400> 99296

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99297
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV33094

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99298
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV33104

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99299
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV33114

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99300
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV33124

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99301
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV33134

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV33144

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV33164

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99305
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV33174

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99306
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV41981

<400> 99306
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99307
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACV41991

<400> 99307

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99308
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV42001

<400> 99308
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99309
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV42008

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99310
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV42018

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49501

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caccgagggc 420

uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

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uccacccgcc gcucccagca gaccaucauc cccaacaucu gguccccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99312
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49512

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caccgagggc 420

uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg aguccccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaaggac 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV49523

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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uccacccgcc gcucccagca gaccaucauc cccaacaucg agucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99314
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49545

<400> 99314

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

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uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 99315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49556

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu ccuccccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccaaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcacu ccaccaccaa gggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccaag aaggaggacu ccuaccccaa gcucuccaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

uccuccaagg agcagcagac ccucuaccag aacgagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu caucccccgag aucgccgagc gccccgaggu caaggaccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucgucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugcac gagugcaaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccgc caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gauccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccguccg caacggcacc 1500

uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV49567

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcgccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acaucacccg cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag accgacggcu ccuaccccaa gcucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcga cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac uggaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99317
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV49578

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaucga cgaggccgag 600

cagaucgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 99318
<211> 1689
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV49589

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaucga cgaggccgag 600

cagaucgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 99319
<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV49600

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccgagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgagau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 99320
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV49611

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccgagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccaagau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaagg ucgaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 99321
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49633

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99322
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49644

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99323
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49676

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcaucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99325
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99326
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hemagglutinin__InfluenzaA__ACV53480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99328
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hemagglutinin__InfluenzaA__ACV53500

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99329
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<212> RNA
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hemagglutinin__InfluenzaA__ACV53880

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99330
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV53881

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99331
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV53882

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99332
<211> 1701
<212> RNA
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<400> 99332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99333
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACV53885

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99334
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACV53899

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99335
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV53909

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99336
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67221

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99338
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV67222

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99339
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67223

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99340
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<212> RNA
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hemagglutinin__InfluenzaA__ACV67224

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99341
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<212> RNA
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hemagglutinin__InfluenzaA__ACV67225

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99342
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hemagglutinin__InfluenzaA__ACV67226

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99344
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV67228

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99345
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<212> RNA
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hemagglutinin__InfluenzaA__ACV67229

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 99346
<211> 1701
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hemagglutinin__InfluenzaA__ACV67230

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 99347
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<220>
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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99355
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<220>
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hemagglutinin__InfluenzaA__ACV67240

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gagugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99356
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67241

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aacggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99357
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67242

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99358
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67244

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99359
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67246

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99360
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV67247

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99361
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACV70073

<400> 99361

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 99362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70093

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99363
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hemagglutinin__InfluenzaA__ACV70103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99364
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99365
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99366
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99367
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70164

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99368
<211> 1701
<212> RNA
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<220>
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<400> 99368

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99369
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cagugccgca ucugcaucug a 1701

<210> 99370
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70194

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99371
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70204

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99372
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70214

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99373
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70224

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99374
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70234

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99375
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70254

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99376
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70264

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99377
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70274

<400> 99377
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99378
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70284

<400> 99378
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99379
<211> 1701
<212> RNA
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<400> 99379

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99380
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70304

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99381
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccucaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99382
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70324

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99383
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70334

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99384
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70344

<400> 99384
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99385
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70354

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<400> 99386

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99388
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99389
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACV70394

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99390
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<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99391
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99392
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV70424

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99393
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV70434

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99394
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hemagglutinin__InfluenzaA__ACV70444

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99395
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<212> RNA
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hemagglutinin__InfluenzaA__ACV70454

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99396
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV70464

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99397
<211> 1701
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<400> 99397

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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<210> 99398
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70484

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99399
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70494

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99400
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hemagglutinin__InfluenzaA__ACV70504

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 99401
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACV70514

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99402
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99403
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99404
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV70544

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99405
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99406
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70584

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99407
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70594

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99408
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70604

<400> 99408
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99409
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70614

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99410
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70624

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99411
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70634

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99412
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACV70644

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99413
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70654

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70664

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99415
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACV70674

<400> 99415

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 99416
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70684

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99417
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70694

<400> 99417
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70704

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99419
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70714

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99420
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70724

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99421
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70734

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99422
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70744

<400> 99422

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70754

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70764

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99425
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70784

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99426
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70794

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgccacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99427
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70804

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99428
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70824

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccucaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99429
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70834

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70844

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70854

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV70864

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaccu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99433

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70884

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99435
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70904

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99436
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70914

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70924

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99438
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70934

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 99439
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV70944

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99440
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 99440

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99441
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99442
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99443
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99444
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99445
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV71004

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99446
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV82230

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99447
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACV82232

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99448
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ACV83662

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99451
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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hemagglutinin__InfluenzaA__ACV83665

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99453
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<212> RNA
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hemagglutinin__InfluenzaA__ACV83667

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99454
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV83668

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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hemagglutinin__InfluenzaA__ACV83671

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99457
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99458
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<212> RNA
<213> Artificial Sequence

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<400> 99458

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99459
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99460
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ACV89502

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 99461
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<212> RNA
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hemagglutinin__InfluenzaA__ACV89516

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 99462
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV90512

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucacc 1560

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<210> 99463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACV91676

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99465
<211> 1701
<212> RNA
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<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99466
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccaggcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31933

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31934

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99469

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99470
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31936

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31939

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31940

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31943

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99474
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99475
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99476
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31948

<400> 99476

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99477
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31949

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99478
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACX31950

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cagugccgca ucugcaucug a 1701

<210> 99479
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACX31951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99480
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACX31954

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99481
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99482
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99483
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACX31957

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99484
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99485
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31960

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99486
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX31961

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 99487
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99487

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99488
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99489
<211> 1701
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99491
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99492
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99493
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACX35277

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99494
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACX35287

<400> 99494

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99495
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucggccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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hemagglutinin__InfluenzaA__ACX36502

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99501
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99502
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<212> RNA
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACX47368

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99504
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACX47369

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<400> 99505

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accgccaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47371

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 99507
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47372

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99508
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47373

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 99509
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACX47374

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99510
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47375

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99511
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACX47376

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99512
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47377

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99513
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hemagglutinin__InfluenzaA__ACX47380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucguca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99514
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACX47381

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucguca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99515
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47382

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucguca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 99516
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47383

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99517
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACX47384

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99518
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACX47385

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99519
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hemagglutinin__InfluenzaA__ACX47387

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99522
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACX61575

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99523
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99524
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACX94091

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99525
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY26192

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99526
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY26202

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99527
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99528
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACY46113

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99529
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46123

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu cggcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99530
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99531
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46163

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99532
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46173

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99533
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46213

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99534
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46223

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99535
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46233

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99536
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46243

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99537
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46253

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99538
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46263

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46273

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99540
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46283

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99541
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACY46293

<400> 99541

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46303

<400> 99542
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46313

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46323

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46343

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46353

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46373

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46383

<400> 99548

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46403

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46413

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99552
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46433

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46443

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99554
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46453

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46463

<400> 99555
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46473

<400> 99556
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46493

<400> 99557
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46513

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga caacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACY46523

<400> 99559

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46533

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46562

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46572

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46582

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46592

<400> 99564
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46622

<400> 99565
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46672

<400> 99566

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99567
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACY46682

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99568
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACY46692

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46712

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99570
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46722

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46742

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY46762

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46772

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY46903

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77534

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99576
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77544

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac caccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccug gucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 99577
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACY77554

<400> 99577

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccaccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 99578
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY77573

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

cgcaucugca ucuga 1695

<210> 99579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY77593

<400> 99579
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac caccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99580
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACY77603

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccug gucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 99581
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hemagglutinin__InfluenzaA__ACY77613

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

cgcaucugca ucuga 1695

<210> 99582
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99583
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99584
<211> 1698
<212> RNA
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<400> 99584

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99585
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77683

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 99586
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77693

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 99587
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77703

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccug gucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 99588
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77713

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccaccuccag 1680

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hemagglutinin__InfluenzaA__ACY77723

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACY77733

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99591
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1695
<212> RNA
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hemagglutinin__InfluenzaA__ACY77783

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gucaccguca cccacuccgu caaccuccuc ggcgacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

cgcaucugca ucuga 1695

<210> 99594
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77813

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99595
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99595

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99596
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACY77833

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccug gucccuccag 1680

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<210> 99597
<211> 1698
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hemagglutinin__InfluenzaA__ACY77843

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99598
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99600
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hemagglutinin__InfluenzaA__ACY77884

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99601
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACY77904

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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cagugccgca ucugcaucug a 1701

<210> 99602
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACY77914

<400> 99602

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99603
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACY77924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 99604
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99605
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99606
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99607
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99608
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99609
<211> 1701
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<210> 99610
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99611
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACY79633

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgcccgcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99612
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ01953

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99613
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99613

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99614
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05061

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccucaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99615
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05071

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05081

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05091

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05101

<400> 99618
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05111

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99620
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05121

<400> 99620

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg gcuccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99621
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05131

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99622
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05141

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99623
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05151

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99624
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05172

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99625
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ05194

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99626
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05205

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 99627
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ05216

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 99628
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 99632
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hemagglutinin__InfluenzaA__ACZ05271

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99633
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hemagglutinin__InfluenzaA__ACZ05282

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99634
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 99636
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99637
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99638
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 99639
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99641
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ05392

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99642
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ05403

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99643
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ACZ06005

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 99660
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 99661
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaaggccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99662
<211> 1698
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99663
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgccuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

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<210> 99664
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ16040

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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hemagglutinin__InfluenzaA__ACZ16050

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99666
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99667
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<212> RNA
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<220>

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<400> 99667

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gucaccguca cccacuccgu cucccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99668
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ16080

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgacggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99669
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccauguccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99670
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16100

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16110

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16120

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16130

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99674
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16140

<400> 99674

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99675
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16150

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99676
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99677
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99678
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuacaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99679
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16190

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99680
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16200

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99681
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16210

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99682
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ACZ16290

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<210> 99689
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hemagglutinin__InfluenzaA__ACZ16390

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99699
<211> 1701
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99701
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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99702
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16430

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99703
<211> 1701
<212> RNA
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<220>

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<400> 99703

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99704
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16450

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16460

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99706
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACZ16470

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99707
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99708
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16490

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16500

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16510

<400> 99710

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16530

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99712
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16540

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99713
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16550

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99714
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16583

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99715
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16593

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16603

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16630

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16640

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16650

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16660

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ16670

<400> 99721

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99723
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hemagglutinin__InfluenzaA__ACZ16690

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99725
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16710

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99726
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16730

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16740

<400> 99728

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16750

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99730
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16760

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99731
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99732
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99733
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16790

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99734
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ16800

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16810

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16820

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16830

<400> 99737
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcaccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ16850

<400> 99739

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16860

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16870

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16880

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgacggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16890

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16900

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16920

<400> 99746

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16930

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16940

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16950

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99750
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16960

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ16970

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ16980

<400> 99752
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ACZ17000

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99754
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99755
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99756
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ17030

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 99757
<211> 1701
<212> RNA
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<400> 99757

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99758
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ17050

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<210> 99759
<211> 1701
<212> RNA
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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99760
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99761
<211> 1701
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hemagglutinin__InfluenzaA__ACZ17080

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99762
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ17090

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gucaccguca cccacuccgu caaccuccuc ggcgacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99763
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<212> RNA
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hemagglutinin__InfluenzaA__ACZ17100

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99764
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ17110

<400> 99764

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccga gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<212> RNA
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hemagglutinin__InfluenzaA__ACZ17120

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17130

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17140

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99768
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17150

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99769
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99770
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99771
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcucca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17200

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17230

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

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cagugccgca ucugcaucug a 1701

<210> 99775
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ17240

<400> 99775

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99780
<211> 1701
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<210> 99781
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<210> 99782
<211> 1701
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<400> 99782

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<210> 99783
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17418

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17438

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99786
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17448

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17458

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ17478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ17488

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99790
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ18240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ18241

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99792
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99793
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99796
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<210> 99797
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<210> 99798
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<210> 99799
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<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99800
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hemagglutinin__InfluenzaA__ACZ45009

<400> 99800

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99802
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99803
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccuccaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99804
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ45014

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99805
<211> 1701
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hemagglutinin__InfluenzaA__ACZ45016

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99806
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45028

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99807
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ45029

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99808
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ45030

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaccuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99809
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45031

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgucggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99810
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45034

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cguccccccc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99811
<211> 1701
<212> RNA
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<220>

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<400> 99811

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99812
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45037

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99813
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45038

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99814
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ45039

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99815
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hemagglutinin__InfluenzaA__ACZ45040

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99816
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99817
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99818
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99819
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

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<210> 99820
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 99822
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__ACZ61122

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 99827
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hemagglutinin__InfluenzaA__ACZ74627

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<210> 99828
<211> 1698
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hemagglutinin__InfluenzaA__ACZ81554

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<210> 99829
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<210> 99830
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<212> RNA
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hemagglutinin__InfluenzaA__ACZ81556

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cccaaccaca ccgucaccgg cgccuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 99831
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hemagglutinin__InfluenzaA__ACZ81557

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 99834
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99835
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ81642

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ81652

<400> 99836

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccga ggccaagucc 480

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<210> 99837
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACZ92130

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<210> 99838
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99839
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ92132

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99840
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ92133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99841
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99842
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ95465

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95837

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95847

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 99845
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACZ95857

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95867

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99847

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99848
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95897

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99849
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95907

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99850
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95927

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ95937

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ95947

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ95957

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99854
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hemagglutinin__InfluenzaA__ACZ95967

<400> 99854

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99855
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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99856
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99857
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 99858
<211> 1701
<212> RNA

<213> Artificial Sequence

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<210> 99859
<211> 1701
<212> RNA
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<210> 99860
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACZ96027

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99861
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ96047

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accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96057

<400> 99862
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96069

<400> 99863
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcaacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96089

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99865

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96129

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96149

<400> 99867
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96159

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96179

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96189

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99871
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96199

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99872
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99873
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96219

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagugccgca ucugcaucug a 1701

<210> 99874
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96229

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 99875
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96239

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 99876
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96249

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 99877
<211> 1701
<212> RNA
<213> Artificial Sequence

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99878
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99879
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99880
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aucugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99882
<211> 1701
<212> RNA
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<210> 99883
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 99883

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<210> 99884
<211> 1701
<212> RNA
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99885
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hemagglutinin__InfluenzaA__ACZ96372

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99886
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aucugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99887
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99888
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99889
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96415

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 99890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96425

<400> 99890

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 99891
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ96435

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<210> 99892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99893
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96476

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99894
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96496

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99895
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96506

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99896
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96526

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99897
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96536

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99898
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96549

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99899
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96559

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99900
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96569

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99901
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<400> 99901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

uccuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99902
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99903
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96599

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99904
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaccugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96619

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96629

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 99907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96639

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96649

<400> 99908

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99909
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96659

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99910
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99911
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 99912
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96689

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96699

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99914
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96719

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99915
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96729

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99916
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96739

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99917
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96749

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99918
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96759

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99919
<211> 1701
<212> RNA
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<220>

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<400> 99919

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96779

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96789

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96809

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 99923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96819

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99924
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hemagglutinin__InfluenzaA__ACZ96829

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 99925
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99926
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ACZ96849

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99927
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99928
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96869

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99929
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96879

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 99930
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ96899

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagugccgca ucugcaucug a 1701

<210> 99931
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96909

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99932
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ96919

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99933
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99934
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ96939

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99935
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ACZ96949

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaugcucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ97021

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ97343

<400> 99937

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 99938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ97353

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 99939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ97363

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99940
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ97383

<400> 99940
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

accuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ97393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98178

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acuacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98188

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98198

<400> 99944

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98208

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ98218

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98228

<400> 99947
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99948
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98238

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98248

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98258

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98268

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98278

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 99953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98288

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 99954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98298

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99955
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<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ACZ98318

<400> 99955

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccacauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98328

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98338

<400> 99957
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98348

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98368

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 99961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98388

<400> 99961
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98398

<400> 99962
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98408

<400> 99963
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98418

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98428

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99966
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98438

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98448

<400> 99967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98458

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98546

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ98560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccccc caagcuccgc cucgccaccg gcaugcgcaa cgucccccuuc 1020

auccaguacc gcggccucuu cggcgccauc accggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99971
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ACZ98567

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaagucccc caagcuccgc cucgccuccg gcaugcgcaa cgucccccuuc 1020

auccaguccc gcggccucuu cggcgccauc accggcuuca ucgaggaggg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98671

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99973
<211> 1701
<212> RNA
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<220>

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<400> 99973

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 99974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ACZ98691

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA60799

<400> 99975
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagcgcaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA69302

<400> 99976
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 99977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA69312

<400> 99977
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA69322

<400> 99978
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99979
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADA69332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99980
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<212> RNA
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hemagglutinin__InfluenzaA__ADA70329

<400> 99980

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 99981
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hemagglutinin__InfluenzaA__ADA71150

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gucaccguca cccacuccgu caaccucguc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 99982
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADA71152

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 99983
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aacuccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuacuucggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucaacgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 99984
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA71158

<400> 99984
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<210> 99985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA71162

<400> 99985
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<210> 99986
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA71164

<400> 99986
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aaccccgagu gcgagcuccu cgucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgccuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcgucc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADA71170

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cucaagggca ucacccccu ccagcucggc aagugcuccg ucgccggcug gauccucggc 240

aaccccaagu gggagcuccu cgucuccaag gaguccuggu ccuacaucgg caagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuuccccu acuacgagga gcuccgcgag 360

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<400> 99991

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<212> RNA
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hemagglutinin__InfluenzaA__ADA71191

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<210> 99993
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADA79587

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99994
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADA79607

<400> 99994
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99995
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99996
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83044

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc cgacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99997
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83580

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99998
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83587

<400> 99998

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 99999
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83591

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucuccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100000
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA83595

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100001
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADA83599

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__ADA83603

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100003
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83611

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100004
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADA83615

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgaccu caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100005
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADA83622

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagcg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaagcu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100006
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83633

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83637

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA83641

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100009
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADA83645

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag accgccaucc gccccaaggu ccgcgaccag 720

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<210> 100014
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hemagglutinin__InfluenzaA__ADA83668

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__ADA83672

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 100016
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<212> RNA
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<210> 100017
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<220>
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hemagglutinin__InfluenzaA__ADA83680

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100018
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA86068

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccau caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100019
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA86086

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100020
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADA86087

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccuuc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgcccuca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100021
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADA86088

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100022
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03603

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca uggacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100023
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03604

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100024
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB03605

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca uggacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB03607

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100026
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03609

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100027
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100028
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03614

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100030
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03617

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100031
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB03619

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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cagugccgca ucugcaucug a 1701

<210> 100032
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03620

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gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucg uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100033
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03622

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100034
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03623

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100035
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03628

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03629

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB03630

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100038
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB25319

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100039
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB25321

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100040
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB27970

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB27980

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB54352

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB54355

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100044
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB65926

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccuc 180

cucaagggca aggccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaagaa ccagcucaag aacaacgcca aggagauggg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucggc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 100045
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADB80153

<400> 100045

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uucgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 100046
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB81399

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB81409

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB81419

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccgaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100049
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADB81429

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100050
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB81439

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100051
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB81449

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100052
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB81459

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cggcggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100053
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB82655

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaac 180

cuccgcggca aggccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucgccguc aacuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaccu ccuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg caccaacggc 480

uucuaccgca accucaucug gcucgucaag aaggagaacu ccuaccccaa gcuccgcaag 540

uccuacguca acaacaagaa gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accaacaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu cccgcaaguu caagcccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca ugaaccgcgg ccccgucucc 840

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uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc ggcuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB82656

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cucaagggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaaggcc aacuccuggu ccuacaucgu cgagaccucc 300

uacuccgaca acggcaccug cuaccccggc gacuucacca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaaggc caacuccugg 420

cccaaccacg agaccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuacccccg ccucuccaag 540

uccuacguca acaacaagaa gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucuccucc 660

uccaccuaca acaagcgcuu caagcccgag aucggcaccc gccccaaggu ccgcgaccag 720

uccggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca ugaagcgcga cuccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacu ccaaguacuc cgaggagucc cgccucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100055
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB82944

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100056
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB82950

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu cgagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89129

<400> 100057
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89139

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89149

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgucgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89150

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89221

<400> 100061
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagaa ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89241

<400> 100062
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcgaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADB89251

<400> 100063

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89261

<400> 100064
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89271

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg gcuccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89281

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89291

<400> 100067
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89301

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89311

<400> 100069
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89321

<400> 100070

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccgag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89331

<400> 100071
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89341

<400> 100072
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89351

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100074
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89361

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89371

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89381

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89391

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89401

<400> 100078
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89411

<400> 100079
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89431

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 100081

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89461

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89481

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89491

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89501

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89511

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89531

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89541

<400> 100088

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100089
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADB89551

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89561

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89571

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100092
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89581

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89591

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cugggcccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100094
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89601

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89611

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89621

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89631

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100098
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89641

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADB89651

<400> 100099

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100100
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89661

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100101
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89671

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 100102
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89681

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100103
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89691

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100104
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB89711

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB89721

<400> 100106

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucga caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 100107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADB90360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADB90370

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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<210> 100109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADB90414

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 100110
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32409

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100111
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32410

<400> 100111
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagaag acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32411

<400> 100112
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgccaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32412

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100114
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32413

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100115
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32414

<400> 100115
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32415

<400> 100116
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADC32416

<400> 100117

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32417

<400> 100118
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaguacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32418

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32419

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguucgg cuaccaccac cagaacgacc agggcuccgc cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32420

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32421

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32422

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucauggu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADC32423

<400> 100124

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32434

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADC32435

<400> 100126
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADC45846

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADC53558

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100152
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ADD14087

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100153
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100154
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<212> RNA
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hemagglutinin__InfluenzaA__ADD14093

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100155
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<212> RNA
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hemagglutinin__InfluenzaA__ADD14095

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100156
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD14097

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 100157
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14099

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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<220>
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hemagglutinin__InfluenzaA__ADD14101

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100159
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD14103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100160
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14111

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaucucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100161
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14115

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14117

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14119

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100164
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14121

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD14123

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100166
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14127

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14129

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccucccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgucgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcuuc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100169
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD14135

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100170
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14137

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADD14139

<400> 100171

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100172
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD14143

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD14145

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100174
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADD14147

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100175
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD14151

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100176
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD14153

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100177
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD14155

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14157

<400> 100178

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14162

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100180
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD14172

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100181
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD14182

<400> 100181
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100182
<211> 1701
<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100183
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100184
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaaguc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu ccgccccgag aucgccgccc gccccaaggu ccgcggccag 720

accggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccgaga accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21457

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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accggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100186
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21467

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<210> 100187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21560

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<210> 100188
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<212> RNA
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hemagglutinin__InfluenzaA__ADD21734

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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<400> 100189

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<212> RNA
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hemagglutinin__InfluenzaA__ADD21764

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100191
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD21774

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

guccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100192
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD21784

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100193
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21794

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100194
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD21804

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100195
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21814

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccuccug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100196
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21824

<400> 100196

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__ADD21834

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100198
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100199
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD21854

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100200
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21864

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100201
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD21884

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg gcuccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100202
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD21894

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100203
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22501

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100204
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22511

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100205
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD22521

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22531

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100207
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100208
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22554

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100209
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22564

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100210
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22574

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100211
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22584

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100212
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22594

<400> 100212
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100213
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<212> RNA
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hemagglutinin__InfluenzaA__ADD22604

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22614

<400> 100214

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100215
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADD22624

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22634

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD22645

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgagggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100218
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22665

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100219
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22675

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22685

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22695

<400> 100221
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22722

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccuccuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22732

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22742

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccuccuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADD22752

<400> 100225

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100226
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22762

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100227
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD22772

<400> 100227
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADD22941

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aucuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ADD22951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100240
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hemagglutinin__InfluenzaA__ADD23072

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100241
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hemagglutinin__InfluenzaA__ADD23082

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100242
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<212> RNA
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hemagglutinin__InfluenzaA__ADD23102

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 100243
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__ADD23122

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100245
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD23132

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADD23142

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100247
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD23162

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaggg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100248
<211> 1701
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hemagglutinin__InfluenzaA__ADD23172

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100249
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD23182

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100250
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD23192

<400> 100250

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100251
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD23202

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__ADD23220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100253
<211> 1701
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hemagglutinin__InfluenzaA__ADD23230

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1701
<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100255
<211> 1701
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hemagglutinin__InfluenzaA__ADD23260

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100256
<211> 1701
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hemagglutinin__InfluenzaA__ADD23280

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100257
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD23290

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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<210> 100258
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADD23300

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100259
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD23310

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD23405

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD64205

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hemagglutinin__InfluenzaA__ADD64206

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100289
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hemagglutinin__InfluenzaA__ADD64214

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<210> 100290
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADD64215

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100297
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagc ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD74448

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100300
<211> 1701
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hemagglutinin__InfluenzaA__ADD74458

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100301
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hemagglutinin__InfluenzaA__ADD74468

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100302
<211> 1701
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hemagglutinin__InfluenzaA__ADD74488

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74498

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74508

<400> 100304

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100305
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74518

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 100306
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD74528

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu ccagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccgc 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100314
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74608

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100315
<211> 1701
<212> RNA
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<220>

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<400> 100315

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74628

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74648

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74658

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74668

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100320
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD74678

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100321
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADD74688

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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aaccccgagu gcgagucccu cuccaccgcc cgcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100328
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hemagglutinin__InfluenzaA__ADD74768

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hemagglutinin__InfluenzaA__ADD74778

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 100335
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<210> 100336
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hemagglutinin__InfluenzaA__ADD74858

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<210> 100337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<212> RNA
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<210> 100359
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hemagglutinin__InfluenzaA__ADD75158

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<210> 100360
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD84494

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ADD84495

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100371
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD96806

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100372
<211> 1701
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hemagglutinin__InfluenzaA__ADD96816

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100373
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD96826

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu cauggaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100374
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD96836

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100375
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD96846

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100376
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD96856

<400> 100376

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD96936

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<210> 100384
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<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD97161

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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hemagglutinin__InfluenzaA__ADD97231

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__ADD97241

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 100398
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<210> 100399
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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD97341

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<210> 100407
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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100415
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADD97441

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uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA

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hemagglutinin__InfluenzaA__ADD97451

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100418
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD97481

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100420
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADD97491

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cuccgcggcg aggccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100421
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD97501

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 100422
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADD97511

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 100423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADD97531

<400> 100423

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100437
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<211> 1701
<212> RNA
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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccau cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD98098

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADD98138

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADD98198

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hemagglutinin__InfluenzaA__ADD98208

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hemagglutinin__InfluenzaA__ADE20321

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100474
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<220>
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hemagglutinin__InfluenzaA__ADE20688

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__ADE20708

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100476
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADE20718

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 100477
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<220>

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 100484
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADE20808

<400> 100484

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<210> 100485
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hemagglutinin__InfluenzaA__ADE20818

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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hemagglutinin__InfluenzaA__ADE20888

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100492
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hemagglutinin__InfluenzaA__ADE20898

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100493
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hemagglutinin__InfluenzaA__ADE20908

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADE20918

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggauccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg aggccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacuccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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hemagglutinin__InfluenzaA__ADE20988

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADE20998

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgaga uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADE21058

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<210> 100507
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<212> RNA
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hemagglutinin__InfluenzaA__ADE21068

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<210> 100508
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADE28761

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgaguccaa cgucaagaac 1380

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cucgagucca uggaggucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ucccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100515
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<210> 100516
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADE28850

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADE28881

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100522
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<212> RNA
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<210> 100523
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<210> 100524
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADE28971

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__ADE45501

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADE45503

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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hemagglutinin__InfluenzaA__ADE45505

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hemagglutinin__InfluenzaA__ADE45507

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 100548
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc gucgagcccg gcgacaagau caucuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaga acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100560
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<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<212> RNA
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hemagglutinin__InfluenzaA__ADF10154

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100562
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADF10174

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 100563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10190

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agcgcguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100564
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hemagglutinin__InfluenzaA__ADF10237

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADF10262

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agcgcguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100566
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100567
<211> 1701
<212> RNA
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<400> 100567

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 100568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10335

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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cagugccgcg ucugcaucug a 1701

<210> 100569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10359

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100570
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADF10369

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<210> 100571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10390

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ADF10528

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100576
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADF10757

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 100577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10828

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<210> 100578
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADF10874

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<210> 100579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10929

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF10996

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27367

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100582
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADF27369

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100583
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADF27370

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacguccu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27371

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 100585

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27373

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaucgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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ucccgcuacu ccaagaaguu caagcccgag aucgagaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uucuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 100601
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<210> 100602
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<400> 100603

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100607
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<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 100608
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<212> RNA
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100611
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27599

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100612
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27609

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100613
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucguccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100614
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADF27629

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100615
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27649

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27659

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27669

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27679

<400> 100618
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27689

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100620
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27699

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100621
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27709

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaucucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100622
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27785

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100623
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27795

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 100624
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF27805

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100625
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF27815

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgacgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<211> 1701
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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 100630
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<210> 100631
<211> 1701
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<210> 100632
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<212> RNA

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccaagu gcgagucccu cuccaccgag uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<400> 100657

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcgc 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100661
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<210> 100664
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF80494

<400> 100664

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100665
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADF80498

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100666
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100667
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100668
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100669
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 100670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF83773

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF83783

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100673
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hemagglutinin__InfluenzaA__ADF83793

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 100674
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100675
<211> 1701
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<400> 100675

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100677
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100678
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADF83843

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100679
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<212> RNA
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<210> 100680
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 100689
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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100690
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100691
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100692
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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 100693
<211> 1701
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<400> 100693

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<210> 100694
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADF87192

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<210> 100695
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hemagglutinin__InfluenzaA__ADF87202

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100696
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADF87212

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100697
<211> 1701
<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg aggccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100698
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87242

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100699
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87252

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100700
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87262

<400> 100700

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100701
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87272

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagugccgca ucugcaucug a 1701

<210> 100702
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF87282

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 100703
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF87292

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc ggcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100704
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87302

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100706
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87341

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87351

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADF87361

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADF87371

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG08115

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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cagugccgca ucugcaucug a 1701

<210> 100711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21004

<400> 100711

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 100712
<211> 1701
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hemagglutinin__InfluenzaA__ADG21006

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaguccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100714
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100715
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 100717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 100718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 100719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 100720
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 100721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgcca ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100722
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acacccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100723
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccaguccggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 100724
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 100725
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21023

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 100726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21024

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 100727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21026

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccu ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 100728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21037

<400> 100728
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21038

<400> 100729

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21040

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100731
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21041

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccguc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100732
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21042

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100733
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100734
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21045

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21046

<400> 100735
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21048

<400> 100736

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21049

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21122

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21123

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100740
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21124

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21125

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21126

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21127

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21128

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21129

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21130

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21131

<400> 100747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21132

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 100749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21134

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100751
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADG21135

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21136

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100753
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21137

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21138

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100755
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21139

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100756
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21140

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucaugcucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21141

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 100758
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21142

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21143

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21144

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21145

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21146

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21147

<400> 100763
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21148

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21149

<400> 100765

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21150

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100767
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21151

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100768
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100769
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21153

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100770
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21154

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100771
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21155

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21156

<400> 100772

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21158

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 100774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG21159

<400> 100774
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100775
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21160

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100776
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21161

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacaacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21163

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21165

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21166

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21168

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uucuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21169

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100782
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21170

<400> 100782
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 100783

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21174

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21175

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21176

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21177

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21178

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21179

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100790
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADG21180

<400> 100790

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21181

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100792
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21183

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100794
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100795
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21185

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100796
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21188

<400> 100796
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100797
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21402

<400> 100797
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cauccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccaccgcugc gacaacgagu gcauggaguc cguccgcaac 1500

ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

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hemagglutinin__InfluenzaA__ADG21414

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagaa guccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacggcgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

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<210> 100799
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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagaa guccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccg gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacguca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagaa guccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acucccccca gggcgagcgc 1020

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccaccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagcg cuccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgcucca agcgcgagga gaucuccggc 1560

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ucccucgccc ucgccaucau ggucgccggc cucuuccucu ggaugugcuc caacggcucc 1680

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADG21429

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcgucg agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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aaccagcgcc ucgucccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacguca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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<210> 100804
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hemagglutinin__InfluenzaA__ADG21437

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aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacguca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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cuccagugcc gcaucugcau cuga 1704

<210> 100805
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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac gccuacccca ccaucaagaa guccuacaac 540

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aaccagcgcc ucgucccccca gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

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aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 100806
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<212> RNA
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hemagglutinin__InfluenzaA__ADG21441

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

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aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgaggcc 600

gagcagaccu cccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccuccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

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gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100810
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<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 100811
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG21914

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 100812
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21915

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 100813
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100814
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100815
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100816
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100817
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100818
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21922

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100819
<211> 1701
<212> RNA
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<220>

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<400> 100819

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100820
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21924

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21925

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21926

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc aaccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100823
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100824
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21928

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcccccgcgu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21930

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100826
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21931

<400> 100826

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100827
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21932

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100828
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21933

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100829
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21934

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100830
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21935

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaacugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100831
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21936

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100832
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21937

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100833
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21938

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc aaccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100834
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21939

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100835
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21940

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21941

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100837
<211> 1701
<212> RNA
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<220>

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<400> 100837

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100838
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100839
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100840
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG21946

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100841
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG21947

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG21948

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG27794

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcac cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG27948

<400> 100844

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG27966

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100847
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG27982

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100848
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG27988

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100849
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG27997

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100850
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG28011

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42093

<400> 100851
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 100852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100853
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<212> RNA
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hemagglutinin__InfluenzaA__ADG42113

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100854
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100855
<211> 1701
<212> RNA
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<400> 100855

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgucaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100856
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100857
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42153

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42193

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100859
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADG42213

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100860
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ADG42233

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42243

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccuc gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100862
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42253

<400> 100862

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42263

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42273

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42283

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100866
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42293

<400> 100866
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42303

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42313

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100869
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42323

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100870
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacgc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100871
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG42343

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggaguccaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42363

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100873
<211> 1701
<212> RNA
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<220>

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<400> 100873

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42403

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100877
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100878
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100879
<211> 1701
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100880
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100881
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42473

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<210> 100882
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42483

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<210> 100883
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100884
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42503

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100885
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100886
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42533

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100887
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42553

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100888
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG42573

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100889
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42583

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42593

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100891
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<400> 100891

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcuccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100892
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100893
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42623

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100894
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100895
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42643

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gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ccgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100896
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG42653

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100897
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG42663

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100898
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42673

<400> 100898

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc ggcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100899
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42683

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100900
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42693

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100901
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42703

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100902
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42723

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag auggccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100903
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42743

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100904
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42753

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cuccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42763

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG42773

<400> 100906
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100907
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<212> RNA
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hemagglutinin__InfluenzaA__ADG42783

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42793

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100909
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100910
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42813

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100911
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42823

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100912
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42833

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42843

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100914
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42853

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100915
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42863

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaucgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaaguacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100916
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42883

<400> 100916

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgaga uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100917
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG42893

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42903

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42913

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100920
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG42923

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG57087

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cgcugccgca ucugcaucug a 1701

<210> 100922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG57088

<400> 100922
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57089

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucc aguacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccgaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57090

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100925
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG57091

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagcgcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100926
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG57092

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaucaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100927
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG57093

<400> 100927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucuggucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100928
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG57094

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100929
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG57095

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100930
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57097

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100931
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57098

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100932
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57099

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucaccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG57100

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccggc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58939

<400> 100934

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58940

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58941

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58942

<400> 100937
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccuccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100938
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58943

<400> 100938
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58944

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100940
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58946

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58947

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58948

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58949

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG58952

<400> 100945

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58953

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100947
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADG58954

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100948
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG58955

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58956

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaucg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58957

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccggca acggcaccug cuaccccggc gaguucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58959

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 100952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG58960

<400> 100952

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58961

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58962

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58963

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100956
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58964

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADG58965

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58966

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58967

<400> 100959
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 100960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG58968

<400> 100960
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 100961
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hemagglutinin__InfluenzaA__ADG59628

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59629

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100963
<211> 1701
<212> RNA
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<220>

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<400> 100963

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100964
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG59631

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59632

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 100966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59633

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59634

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59635

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59636

<400> 100969
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59638

<400> 100970

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59639

<400> 100971
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59641

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59643

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100974
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59644

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59646

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 100976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59647

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100977
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59648

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100978
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG59649

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 100979
<211> 1701
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hemagglutinin__InfluenzaA__ADG59650

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100980
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hemagglutinin__InfluenzaA__ADG59651

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 100981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 100981

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 100982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59653

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 100983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59655

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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cagugccgca ucugcaucug a 1701

<210> 100984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59656

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 100985
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hemagglutinin__InfluenzaA__ADG59657

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 100989
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100991
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100992
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<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgaccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgaccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 100996
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 100997
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 100998
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<212> RNA
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<210> 100999
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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101000
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<212> RNA
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hemagglutinin__InfluenzaA__ADG59675

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101001
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59676

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101002
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59678

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101003
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59680

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101004
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59681

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101005
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59683

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu caagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101006
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59684

<400> 101006

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG59685

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ugcaucggcu accacgccaa caacuccacc gacaccaucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101008
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59686

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101009
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59687

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101010
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG59688

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101011
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59689

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101012
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59691

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 101013
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59693

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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<210> 101014
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59696

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101015
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59697

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101016
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hemagglutinin__InfluenzaA__ADG59700

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccucaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101017
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<212> RNA
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<220>

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<400> 101017

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101018
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADG59702

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc aaccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101019
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG59703

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucguca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101020
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADG76646

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101021
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADG76652

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101022
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01808

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 101023
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01818

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101024
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01828

<400> 101024

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01838

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101026
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101027
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01858

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101028
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01868

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01878

<400> 101029
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101030
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01888

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101031
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADH01898

<400> 101031
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101032
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01908

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101033
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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgag uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101034
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgccuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101035
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01948

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01958

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101038
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH01968

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101040
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADH01988

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101041
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADH02008

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gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucaucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24508

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101044
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADI24515

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24517

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 101046
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24519

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24521

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24523

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101049
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24525

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcgag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc cgcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101050
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24527

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101051
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24529

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101052
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24531

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccuccu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugcaaga ucugcaucug a 1701

<210> 101053
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24536

<400> 101053
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24546

<400> 101054
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101055
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24553

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101056
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADI24555

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI24557

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24559

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24561

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24563

<400> 101060

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24565

<400> 101061
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24567

<400> 101062
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24569

<400> 101063
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101064
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24571

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24573

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24575

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucgag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24577

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24581

<400> 101068
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gguccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24583

<400> 101069
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24590

<400> 101070
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADI24597

<400> 101071

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aacugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24612

<400> 101072
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24619

<400> 101073
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgucg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI24621

<400> 101074
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcaccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48184

<400> 101075
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugggccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48186

<400> 101076
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48188

<400> 101077
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

gacaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48190

<400> 101078

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48192

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucaccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48194

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccc ucgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48196

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgacu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101082
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48198

<400> 101082
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48200

<400> 101083
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48202

<400> 101084
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagau cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48204

<400> 101085
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgucgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca agaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48208

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48210

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48212

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acgucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADI48214

<400> 101089

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ccgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48216

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acgucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48218

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accaggacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48220

<400> 101092
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

accaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucggcu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48622

<400> 101093
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101095
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<212> RNA
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hemagglutinin__InfluenzaA__ADI48642

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101096
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADI48652

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101097
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADI48672

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101098
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48682

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI48692

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101100
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48702

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101101
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48712

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101102
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48722

<400> 101102
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101103
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48732

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101104
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48742

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48752

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48762

<400> 101106
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADI48772

<400> 101107

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48782

<400> 101108
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI48792

<400> 101109
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacaucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49029

<400> 101110
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccucaagaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49240

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49260

<400> 101112
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49270

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101114
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49280

<400> 101114

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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cagugccgca ucugcaucug a 1701

<210> 101115
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49312

<400> 101115
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49322

<400> 101116
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49332

<400> 101117
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101118
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49342

<400> 101118
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49352

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49362

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49382

<400> 101121
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49392

<400> 101122
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49717

<400> 101123
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49727

<400> 101124
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101125
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<212> RNA
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<220>

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<400> 101125

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI49747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101127
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI49757

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101128
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101129
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI49777

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101130
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49787

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccau cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101131
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI49822

<400> 101131
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101132
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI50027

<400> 101132

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaaguacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101133
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI52834

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101134
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI52835

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101135
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagcg ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101136
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI52837

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggucaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaacggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101137
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI72915

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101138
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI72916

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101139
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI72917

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101140
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI72918

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgaccgcgg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101141
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADI72919

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101142
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADI72920

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101143
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<212> RNA
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<400> 101143

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101144
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADI72922

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101145
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADI72923

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcccc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101146
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI72924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101147
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADI72925

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101148
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI72926

<400> 101148
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccggcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADI72927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcaaggagau cgacggcguc 1560

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<210> 101151
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101152
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101153
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADI72931

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 101154
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI72932

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 101155
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI75818

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

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cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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hemagglutinin__InfluenzaA__ADI75851

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 101159
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101161
<211> 1701
<212> RNA
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<220>

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<400> 101161

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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<210> 101162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 101163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99570

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101164
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99580

<400> 101164
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99590

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101166
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99610

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99620

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucaccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99630

<400> 101168

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaaga acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101169
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99640

<400> 101169
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccgag 900

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cagugccgca ucugcaucug a 1701

<210> 101170
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99660

<400> 101170
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99670

<400> 101171
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacggcuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101172
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99680

<400> 101172
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99690

<400> 101173
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101174
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99700

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucuccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADI99710

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101176
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99720

<400> 101176
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cucccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101177
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADI99730

<400> 101177
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ00497

<400> 101178
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADJ00498

<400> 101179

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101180
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ00501

<400> 101180
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101181
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18163

<400> 101181
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101182
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18165

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101183
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18167

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101184
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18169

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18171

<400> 101185
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggc ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuaccaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacaucc acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

cagggccgca ugaacuacua cuggacccuc gucgagcucg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gaccaccacc 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18173

<400> 101186

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ18175

<400> 101187
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101188
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADJ18177

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

guccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101189
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40444

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu caagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101190
<211> 1701
<212> RNA

<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

gagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101191
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40464

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccuca uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101192
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40474

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101193
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40494

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 101194
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40514

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101195
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40524

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101196
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40534

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101197
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101197

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaacac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101198
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40564

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101199
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40574

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101200
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40584

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101201
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40594

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101202
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40604

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101203
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40614

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101204
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40634

<400> 101204

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101205
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40644

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101207
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ40664

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101208
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ40674

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101209
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ41816

<400> 101209
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccguccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cauccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101210
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ56640

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101211
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ56650

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101212
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ67983

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101213
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ67984

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ67985

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101215
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADJ80241

<400> 101215

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80242

<400> 101216
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 101217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80243

<400> 101217
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101218
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80634

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101219
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80644

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80654

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ80674

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80684

<400> 101222

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80694

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaacc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADJ80704

<400> 101224
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80714

<400> 101225
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ccgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101226
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ80724

<400> 101226
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101228
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101229
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101230
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101231
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ80784

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101232
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADJ80794

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101233
<211> 1701
<212> RNA
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<400> 101233

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cuccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101238
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccaacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101239
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<210> 101240
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADJ80893

<400> 101240

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<210> 101241
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<212> RNA
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hemagglutinin__InfluenzaA__ADJ80910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101242
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hemagglutinin__InfluenzaA__ADJ80927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101243
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

ucccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101244
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADJ80947

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101245
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADJ80967

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101246
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ80977

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101247
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ80993

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccaacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101248
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ81003

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101249
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ81013

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101250
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ81023

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101251
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADJ81033

<400> 101251

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101252
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101253
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ81053

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101254
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADJ81063

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101255
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ84772

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cgcugcaaca ucugcaucug a 1701

<210> 101256
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADJ88782

<400> 101256
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101257
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK21733

<400> 101257
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101258
<211> 1701
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hemagglutinin__InfluenzaA__ADK21743

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101259
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagggcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101260
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101261
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK21773

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101262
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADK21783

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101263
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK21813

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101264
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK21823

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101265
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21833

<400> 101265
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccgc gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101266
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21843

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101267
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21853

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101268
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21863

<400> 101268
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101269
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADK21873

<400> 101269

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101270
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21883

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu ccccaaguac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101271
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21893

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101272
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK21903

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101274
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccacc 1620

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<210> 101275
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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccaacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101277
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg accacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101278
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<212> RNA
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hemagglutinin__InfluenzaA__ADK32390

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 101279
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADK32400

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<210> 101280
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK32420

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 101285
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101286
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<210> 101287
<211> 1701
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<400> 101287

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<210> 101288
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK32502

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101291
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101293
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101294
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADK32697

<400> 101294

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101295
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADK32776

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101296
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33621

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101297
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33631

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggucaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101298
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33641

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101299
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33651

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101300
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33661

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101301
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33671

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33681

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33691

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33701

<400> 101304
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101305
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADK33711

<400> 101305

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101306
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33721

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101307
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33731

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101308
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33741

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101309
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33751

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101310
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33761

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33771

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101312
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33781

<400> 101312

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33791

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101314
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33801

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101316
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ccgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33831

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaacac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK33841

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK33851

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucau cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101322
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<220>
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hemagglutinin__InfluenzaA__ADK33881

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101324
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<220>
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hemagglutinin__InfluenzaA__ADK33901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucaucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101326
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK33931

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagugccgca ucugcaucug a 1701

<210> 101327
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101336
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK62683

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101337
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101338
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101339
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK64992

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101340
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK65001

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101341
<211> 1701
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<400> 101341

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucggc 780

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<210> 101342
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK87287

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101343
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK87288

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccgccga gcucguccag 180

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gaccucuucg ucggccgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 101359
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<212> RNA
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<220>

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<400> 101359

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccccccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacucc accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101360
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADK87317

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101361
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac cgagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaag 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 101363
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101366
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hemagglutinin__InfluenzaA__ADK87328

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101367
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK87334

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aucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucuccaagcu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccgccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caccuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101368
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK87336

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucuccaagcu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg accgcgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgagg acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101369
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK87338

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101370
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK90193

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggucguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101371
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90194

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101372
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90195

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucguca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101373
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90196

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101374
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90197

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101375
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK90198

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101376
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADK90199

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101377
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101377

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau cgccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccgucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101378
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90201

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101379
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90202

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc cucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101380
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90203

<400> 101380
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101381
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK90204

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101382
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADK94191

<400> 101382
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101388
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 101399
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 101401
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

accaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101403
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<212> RNA
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hemagglutinin__InfluenzaA__ADK98503

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 101404
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADK98623

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101405
<211> 1701
<212> RNA
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<220>
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<210> 101406
<211> 1701
<212> RNA

<213> Artificial Sequence

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 101416
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 101417
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 101418
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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<210> 101421
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 101431

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101434
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101436
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 101478
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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 101480
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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<210> 101482
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101483
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hemagglutinin__InfluenzaA__ADL28247

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101484
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hemagglutinin__InfluenzaA__ADL28258

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101485
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<400> 101485

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<211> 1701
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hemagglutinin__InfluenzaA__ADL29760

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gucaccguca cccacuccgu caaccuccuc gaguacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101496
<211> 1701
<212> RNA

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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101497
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADL32017

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101498
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101499
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32047

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101500
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32057

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101502
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101503
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<212> RNA
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<400> 101503

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101504
<211> 1701
<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101505
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32364

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aucuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32374

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101507
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADL32384

<400> 101507
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101508
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADL32394

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__ADL32404

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<400> 101510

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgcccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101511
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<212> RNA
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hemagglutinin__InfluenzaA__ADL32424

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

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<210> 101512
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccauccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggauccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101513
<211> 1701
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101514
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32454

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101515
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32464

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101516
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32484

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101517
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hemagglutinin__InfluenzaA__ADL32504

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaugug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101519
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101520
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101521
<211> 1701
<212> RNA
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<220>

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101522
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADL32670

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101523
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADL32690

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101524
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgccuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucc accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccucccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<400> 101546

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccucccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aaccccgaga acggcaccug cuaccccggc cacuucgccg gcuacgagga gcuccgcgag 360

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<212> RNA
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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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<400> 101564

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101565
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM07163

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101567
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM07460

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 101568
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM07504

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 101569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM12806

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101570
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM12817

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 101571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12839

<400> 101572
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM12850

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM12861

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM12871

<400> 101575

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12891

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12911

<400> 101579
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM12921

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12931

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12941

<400> 101582

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM12951

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12961

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12971

<400> 101585
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101586
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM12981

<400> 101586
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101589
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101590
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101591
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM13031

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101592
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADM13041

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 101593
<211> 1701
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<400> 101593

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 101594
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM13061

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADM13071

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101599
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101600
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101601
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM13131

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101602
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM13141

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101603
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13151

<400> 101603
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101604
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13161

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101605
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13171

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101606
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13181

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101607
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13191

<400> 101607
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101608
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13211

<400> 101608
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101609
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13221

<400> 101609
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101610
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13231

<400> 101610
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101611
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101611

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101612
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101613
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM13261

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101614
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM13271

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101615
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13281

<400> 101615
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13291

<400> 101616
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13301

<400> 101617
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgucgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13311

<400> 101618

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13321

<400> 101619
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101620
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13331

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101621
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13341

<400> 101621
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101622
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13351

<400> 101622
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101623
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13442

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101624
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13443

<400> 101624
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101625
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM13444

<400> 101625
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

uccggcuucu ucucccgccu caacuggcuc accaaguccg gcuccaccua ccccguccuc 540

aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg agucccgccc cuggguccgc 720

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uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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<210> 101628
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<210> 101629
<211> 1701
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<210> 101630
<211> 1701
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uccacccgcc gcucccagca gaccaucauc cccaacaucg aguccccgccc cuggguccgc 720

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<210> 101631
<211> 1701
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<210> 101632
<211> 1701
<212> RNA
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<220>
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<210> 101633
<211> 1701
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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

aacuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1695
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu cccucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggacguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucgagacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101638
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 101639
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hemagglutinin__InfluenzaA__ADM14571

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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<210> 101640
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<210> 101641
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101648
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<210> 101649
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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hemagglutinin__InfluenzaA__ADM14737

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<210> 101656
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hemagglutinin__InfluenzaA__ADM14746

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<210> 101657
<211> 1695
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hemagglutinin__InfluenzaA__ADM14756

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

cgcaucugca ucuga 1695

<210> 101658
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14765

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101659
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14775

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101660
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14802

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

auccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101661
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14830

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

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<210> 101662
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14848

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 101663
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14866

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101664
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM14876

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

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<400> 101665

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucguca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1695
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101669
<211> 1695
<212> RNA
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hemagglutinin__InfluenzaA__ADM14921

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 101671
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM14948

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<210> 101672
<211> 1695
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM14966

<400> 101672

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccgg ccacuccugc 1680

cgcaucugca ucuga 1695

<210> 101673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM14975

<400> 101673
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101674
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucguca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101675
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM23841

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101676
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM23843

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101677
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM23844

<400> 101677
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101678
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM23845

<400> 101678
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101679
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM23846

<400> 101679
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101680
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM23847

<400> 101680
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgucggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101683
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 101684
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101685
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM23855

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 101686
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM23856

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101687
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM25945

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 101688
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADM25948

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__ADM26264

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101697
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26272

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggccgcugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101698
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26274

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

gaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101699
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26276

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101700
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26277

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101701
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuc cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuuc gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101702
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26279

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 101703
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26280

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101704
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26281

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag uccauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagcgccgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26282

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagcgccgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101706
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26283

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26284

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26285

<400> 101708

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM26784

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cgcugcaaca ucugcaucug a 1701

<210> 101710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26795

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM26817

<400> 101711
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101712
<211> 1704
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM31424

<400> 101712
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

ccccucugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugcuccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaaggacuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cucaaggaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcaac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgucc ucgccaucau gauggccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 101713
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101714
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31488

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101715
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31498

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31508

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac ccgcuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaagu cccucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31518

<400> 101717
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31528

<400> 101718
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM31538

<400> 101719

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31548

<400> 101720
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag gucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31558

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau ccgcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31568

<400> 101722
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101723
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM31578

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101724
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31588

<400> 101724
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagaccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101725
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31598

<400> 101725
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacgc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31608

<400> 101726

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31618

<400> 101727
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31628

<400> 101728
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31638

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101730
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31648

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101731
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31658

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101732
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31668

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101733
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31688

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 101734
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31698

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucauccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31708

<400> 101735
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31718

<400> 101736
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM31728

<400> 101737

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ccuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31738

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31748

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31758

<400> 101740
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgaccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31768

<400> 101741
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31778

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31798

<400> 101743
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31808

<400> 101744

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accuccucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucggccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31818

<400> 101745
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM31828

<400> 101746
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagcgcaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31838

<400> 101747
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagcgcaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101748
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31848

<400> 101748
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31858

<400> 101749
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

gagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31868

<400> 101750
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucucca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101751
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<220>
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hemagglutinin__InfluenzaA__ADM31878

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101752
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM31888

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101753
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM31908

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg accacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101755
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101755

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 101756
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM31928

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM31948

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101758
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM31958

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101759
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hemagglutinin__InfluenzaA__ADM31968

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101761
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM31998

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32008

<400> 101762

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32018

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM32028

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 101765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32038

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101766
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32048

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101767
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101768
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101769
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101770
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM32088

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101771
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM32098

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 101772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32108

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101773
<211> 1701
<212> RNA
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<220>

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<400> 101773

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 101774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32561

<400> 101774
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101775
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101776
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101777
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32601

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32611

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32621

<400> 101780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 101781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32631

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacc ucuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32641

<400> 101782
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32651

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101784
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32661

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaacg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32671

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32681

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32691

<400> 101787
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32701

<400> 101788
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32711

<400> 101789
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101790
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hemagglutinin__InfluenzaA__ADM32721

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101791
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<400> 101791

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101792
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32761

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101794
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32771

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccgag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 101795
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32781

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101796
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32791

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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cagugccgca ucugcaucug a 1701

<210> 101797
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32801

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gucaccguca cccacuccgu caacauccuc gagaacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101798
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32811

<400> 101798

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101799
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM32821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101800
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101801
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32841

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101802
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32851

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101803
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32861

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101804
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32871

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101805
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101806
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32929

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101807
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM32939

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101808
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101809
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101809

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucgagucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101810
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32977

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cgcugccgca ucugcaucug a 1701

<210> 101811
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM32986

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cgcugccgca ucugcaucug a 1701

<210> 101812
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM32995

<400> 101812
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101813
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM33004

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101814
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33023

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101815
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33040

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101816
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33050

<400> 101816

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101817
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33069

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cgcugccgca ucugcaucug a 1701

<210> 101818
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33079

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cgcugccgca ucugcaucug a 1701

<210> 101819
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33099

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cgcugccgca ucugcaucug a 1701

<210> 101820
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33109

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucauggu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33128

<400> 101821
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33137

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101823
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33147

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101824
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33157

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33167

<400> 101825
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101826
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33177

<400> 101826
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101827
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM33186

<400> 101827

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101828
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33195

<400> 101828
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101829
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33204

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101830
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33222

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101831
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33232

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101832
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33241

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101833
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33251

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cgcugccgca ucugcaucug a 1701

<210> 101834
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33260

<400> 101834

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cgcugccgca ucugcaucug a 1701

<210> 101835
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33280

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccguc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccccccgc 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33290

<400> 101836
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101837
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33300

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101838
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM33310

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101839
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33320

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccuuc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101840
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33340

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101841
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM33355

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33365

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33375

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM33385

<400> 101844
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101845
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101846
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101847
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101848
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101849
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 101850
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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<210> 101851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52453

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52473

<400> 101852

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accuccucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucggccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52483

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101854
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52493

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101855
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM52513

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101856
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52524

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101857
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52534

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52554

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101859
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52564

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52574

<400> 101860
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52584

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52594

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM52604

<400> 101863

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52614

<400> 101864
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52624

<400> 101865
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52634

<400> 101866
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52644

<400> 101867
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52654

<400> 101868
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52664

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM52674

<400> 101870

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52684

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM52704

<400> 101872
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM52714

<400> 101873
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101874
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM86399

<400> 101874
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM86409

<400> 101875
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101876
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM86419

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101877
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM86440

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 101878
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM86450

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101879
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95450

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cuggcccucc 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc auguggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaaccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucacccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 101880
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM95745

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 101881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101881

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 101882
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 101883
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95749

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101884
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM95750

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gucaccguca cccacuccuu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcuccu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101885
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADM95751

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 101886
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95752

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101887
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95753

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101888
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95754

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cagugccgca ucugcaucug a 1701

<210> 101889
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95755

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95757

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101891
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95758

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101892
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95759

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgacu acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101893
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM95760

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101894
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95761

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101895
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95763

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaaga acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101896
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95764

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101897
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95765

<400> 101897
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101898
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95767

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101899
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101899

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101900
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95769

<400> 101900
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101901
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95771

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101902
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95772

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101903
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95774

<400> 101903
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101904
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95775

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95776

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95778

<400> 101906

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95779

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagc ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101909
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM95783

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 101910
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95784

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101911
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95785

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101912
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95786

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 101913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95788

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101914
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95789

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101915
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95790

<400> 101915
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101916
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95791

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 101917

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgcaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95793

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95794

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95795

<400> 101920
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95798

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95799

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cgagaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95800

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgcccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95801

<400> 101924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101925
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95802

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101926
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95803

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101927
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95804

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagaac 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101928
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95805

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101929
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95808

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101930
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95809

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 101931
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADM95810

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101932
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADM95812

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95816

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95819

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM95820

<400> 101935

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95822

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95823

<400> 101938
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95824

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101940
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95825

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95826

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADM95827

<400> 101942

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95828

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95829

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95831

<400> 101945
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101946
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95832

<400> 101946
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM95833

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95834

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95836

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95837

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95838

<400> 101951
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95839

<400> 101952
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM95840

<400> 101953

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95842

<400> 101954
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95843

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95844

<400> 101956
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95845

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagacc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95846

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95847

<400> 101959
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95848

<400> 101960

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95849

<400> 101961
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucaucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM95850

<400> 101962
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95851

<400> 101963
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101964
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95852

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagauccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95854

<400> 101965
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95855

<400> 101966
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95857

<400> 101967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95858

<400> 101968
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95859

<400> 101969
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95860

<400> 101970
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADM95862

<400> 101971

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95864

<400> 101972
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcccccgcgu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95865

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADM95866

<400> 101974
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaucucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101975
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN06300

<400> 101975
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 101976
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN06311

<400> 101976
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 101977
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN06322

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggucgacc agcgcacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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ugccgcaucu gcaucuga 1698

<210> 101978
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN06344

<400> 101978

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 101979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN06366

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 101980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN26165

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucaucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgcccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN26175

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101982
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN78194

<400> 101982
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 101983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN78195

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 101984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN78212

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 101989
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hemagglutinin__InfluenzaA__ADN89116

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hemagglutinin__InfluenzaA__ADN89127

<400> 101992
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 101993
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 101994
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 101995
<211> 1698
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 101996
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADN89193

<400> 101996

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<210> 101997
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89204

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 101998
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89215

<400> 101998
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 101999
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89226

<400> 101999
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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89237

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggg cuccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102001
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89248

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102002
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89259

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102003
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

<210> 102004
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89292

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

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aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102005
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89303

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 102006
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89314

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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<210> 102007
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADN89325

<400> 102007

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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hemagglutinin__InfluenzaA__ADN89336

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccgac 600

aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102009
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89347

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102010
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102011
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102012
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89380

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 102013
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADN89391

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

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<210> 102014
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89402

<400> 102014

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<210> 102015
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89413

<400> 102015
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADN89424

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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<212> RNA
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hemagglutinin__InfluenzaA__ADN89435

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<212> RNA

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<210> 102020
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89468

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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<210> 102021
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89479

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hemagglutinin__InfluenzaA__ADN89490

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<210> 102023
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89501

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102024
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hemagglutinin__InfluenzaA__ADN89512

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102025
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADN89534

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102027
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89545

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102028
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hemagglutinin__InfluenzaA__ADN89556

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102029
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89567

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 102030
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89578

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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<210> 102031
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89589

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADN89600

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu cacccgcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

auggucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADN89611

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ADN89622

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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hemagglutinin__InfluenzaA__ADN89633

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 102036
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADN89644

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 102037
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADN89655

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 102038
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89666

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADN89688

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADN89699

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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hemagglutinin__InfluenzaA__ADN89732

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 102045
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<212> RNA
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hemagglutinin__InfluenzaA__ADN89743

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<210> 102046
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADN89765

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaagaa ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADN89776

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADN89787

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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hemagglutinin__InfluenzaA__ADN89820

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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<212> RNA
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hemagglutinin__InfluenzaA__ADN89831

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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<212> RNA
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<210> 102054
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89864

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102055
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADN89875

<400> 102055
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102056
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89886

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89897

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89908

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89919

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89930

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADN89941

<400> 102061

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89952

<400> 102062
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89963

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN89974

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN89996

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN90007

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN90018

<400> 102068

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90040

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90051

<400> 102070
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90062

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102072
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90073

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90095

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90106

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN90117

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90128

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90139

<400> 102078
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADN90150

<400> 102079

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90161

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90172

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90183

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90194

<400> 102083
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90205

<400> 102084
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN90216

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ADN92467

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccaggcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102087
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccaggcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102088
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102089
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102090
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADN92510

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102091
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hemagglutinin__InfluenzaA__ADN92520

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102092
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADN92530

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102093
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADN92540

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102094
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN92550

<400> 102094
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADN92560

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO00730

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADO00740

<400> 102097

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102098
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO00750

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12143

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102100
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12153

<400> 102100
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102101
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12163

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102102
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12173

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102103
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12183

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102104
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12193

<400> 102104

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12203

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12213

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12223

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102108
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12233

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12243

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12253

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12263

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102112
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADO12273

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12283

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102114
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12293

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102115
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADO12303

<400> 102115

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 102116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12313

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12323

<400> 102117
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12333

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12343

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102120
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO12353

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12363

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12373

<400> 102122

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12383

<400> 102123
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12403

<400> 102124
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12413

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102126
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12423

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102127
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12433

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102128
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO12443

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102129
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12453

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102130
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO12463

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 102131
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12473

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gucaccguca cccacuccgu caaccuccuc gaggacaagc agaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 102132
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO12493

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<400> 102133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcgagg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102137
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<212> RNA
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<210> 102139
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hemagglutinin__InfluenzaA__ADO12563

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<210> 102140
<211> 1701
<212> RNA
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<220>
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<400> 102140

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102149
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADO14356

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccgaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102150
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102151
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<400> 102151

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102152
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADO14361

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca agggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102153
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO14362

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 102154
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO21015

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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<212> RNA
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hemagglutinin__InfluenzaA__ADO21026

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ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaaccccc ucaucggccc ccgcccccuc gucaacggcc agcagggccg caucgacuac 720

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<210> 102156
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADO21037

<400> 102156
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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccgg caccaucugg 420

aacgucuccu acggcggcac cuccaaggcc ugcuccgacu ccuucuacaa guccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccu acaucggccc ccgcccccuc gucaacggcc agcagggccg caucgacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcgucc gcuccaacgg caaccucauc 780

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cucaacuccg gcaacugcgu cguccagugc cagaccgagc gcggcggccu caacaccacc 900

cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga ccucacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 102157
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO21048

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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccgg caccaucugg 420

aacgucuccu acggcggcac cuccaaggcc ugcuccgacu ccuucuacaa guccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccacuucau gugggcauc aaccaccccc ccaccgacac cacccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc agcagggccg caucgacuac 720

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcgu cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 102158
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 102158

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102159
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102160
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO25122

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102161
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25132

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102162
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25142

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25152

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucucccu cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102164
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25162

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25172

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102166
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25182

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25192

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25202

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102169
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADO25212

<400> 102169

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102170
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25222

<400> 102170
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25232

<400> 102171
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102172
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25242

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25252

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102174
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25262

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO25272

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgucaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102176
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO25282

<400> 102176

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102177
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO27622

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO29887

<400> 102178
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 102179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO29888

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccgc 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102180
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29889

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102181
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO29890

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgucg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102182
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29891

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagac caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccucuccga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102183
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29892

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggccg cauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgucg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102184
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29893

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO29894

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 102186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO29895

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADO29897

<400> 102187

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaagug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuacccccg ccucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac ggcugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccguc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102188
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29898

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102189
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADO29899

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102190
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hemagglutinin__InfluenzaA__ADO29900

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gaccucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguc caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102191
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<212> RNA
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hemagglutinin__InfluenzaA__ADO29901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgccaag aagggcaacu ccuaccccaa ggucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 102192
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29902

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102193
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO29903

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ccgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 102194
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO29904

<400> 102194

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccgccccucc 600

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<210> 102195
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO29905

<400> 102195
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gucaccguca cccgcuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccaacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102196
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaaccgcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102197
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaagcu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102198
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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gaguggcgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102199
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucauccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102200
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hemagglutinin__InfluenzaA__ADO29910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

ccccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 102201
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO30407

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 102202
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102203
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33202

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102204
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33240

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102205
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 102205

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33254

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102207
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33261

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102208
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33269

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102209
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33277

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102210
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33285

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102211
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33293

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102212
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33307

<400> 102212

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102213
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33313

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102215
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33337

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102216
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33345

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33352

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102218
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO33360

<400> 102218
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102219
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33368

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102220
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33376

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102221
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO33384

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADO33391

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO79923

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagcgccgca ugaacuacua cuggacccuc guccagcccg gcgacaagau caccuuccag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

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<210> 102225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO79924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

cccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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cagugccgca ucugcaucug a 1701

<210> 102226
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADO79925

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccacccacg aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaagau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102227
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO79926

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuucuccaa gcucuccaag 540

accuaccuca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgucggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102228
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADO79927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgc cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102230
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADO79929

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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<210> 102231
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADO79930

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccaccgaca aguggaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 102232
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 102234
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADP95351

<400> 102234
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102235
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADP95361

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102236
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADP95371

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102237
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADP95381

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102238
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADP95391

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102239
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28007

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102240
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28008

<400> 102240
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102241
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADQ28009

<400> 102241

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102251
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102254
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADQ28022

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 102255
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADQ28023

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102256
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADQ28024

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 102257
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADQ28025

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102258
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28028

<400> 102258
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102259
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 102259

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102260
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28030

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102261
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28031

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102262
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28032

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102263
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28034

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102264
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28035

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccgc 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102265
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28036

<400> 102265
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102266
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28037

<400> 102266

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102267
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28038

<400> 102267
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102268
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28039

<400> 102268
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102269
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28040

<400> 102269
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102270
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28041

<400> 102270
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102271
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28043

<400> 102271
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgacgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102272
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28044

<400> 102272
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102273
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28045

<400> 102273
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102274
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28047

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102275
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28048

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102276
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADQ28049

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102277
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADQ28050

<400> 102277

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102278
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28051

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102279
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28053

<400> 102279
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102280
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28055

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102281
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28056

<400> 102281
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102282
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28057

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102283
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28058

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102284
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28059

<400> 102284

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102285
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28060

<400> 102285
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102286
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28061

<400> 102286
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc cgcugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccaacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102287
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28063

<400> 102287
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacca cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccg ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102288
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28064

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102289
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28065

<400> 102289
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg gccagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccagguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102290
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28066

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcccccgcgu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102291
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28067

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102292
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28068

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102293
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28069

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102294
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADQ28070

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102295
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADQ28071

<400> 102295

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102296
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADR32361

<400> 102296
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102297
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ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccucauc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca aggccccccu ccagcucggc aagugcaaca ucgccggcug gguccucggc 240

aaccccgagu gcgaguccccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaaccagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagcgcac ccucuaccgc aaggacaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

cccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccccggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acaucacccg cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

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<210> 102300
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cucaagggca aggccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccuacguca acaaccagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagcgcac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcaaccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccgcauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102301
<211> 1689
<212> RNA
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hemagglutinin__InfluenzaA__ADT78961

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accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

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<210> 102302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADT78971

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<210> 102303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADT79010

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<210> 102304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

uucaacugga ccggcgucac ccagaacggc ggcuccuccg ccugcaagcg cggccccgac 480

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uccaccaagc gcucccagca gaccgucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102305
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102306
<211> 1701
<212> RNA

<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acaucacccg cggcgucacc gccgccugcu cccacgccaa gaaguccucc 480

uucuacaaga accuccucug gcucaccgag gccaacggcu ccuaccccaa ccucaucaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagcgcac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102307
<211> 1689
<212> RNA
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hemagglutinin__InfluenzaA__ADT79119

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ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

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cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgacau cgccacccgc cccaagguca acggccucgg cggccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 102308
<211> 1689
<212> RNA
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hemagglutinin__InfluenzaA__ADT79129

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ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucgccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 102309
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADT79232

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacaagcacc ccaucaccau cggcaagugc 960

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<210> 102310
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADT79242

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADT91182

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102312
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU20561

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADU20562

<400> 102313

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaga ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102314
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU25478

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gucaccguca cccacuccgu caaccuccuc gaguccuccc acaacggcaa gcucugcucc 180

cucaacggca aggccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgaccuccu ccucaccguc aacuccuggu ccuacaucau cgagaccucc 300

accuccaaga acggcgccug cuaccccggc gaguucgccg acuacgagga gcuccgcgag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg agaccaccaa gggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccacccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

uccaaguacu accagcgcuu cacccccgag aucgucaccc gccccaaggu ccgcgagcag 720

gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaacaaggg cuccuccucc 840

ggcaucauga uguccgacgc ccacguccac aacugcacca ccaagugcca gaccccccac 900

ggcgcccuca aguccaaccu ccccuuccag aacguccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac ccagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccuca uccuccucga gaacgagcgc acccucgacu uccacgacuu caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacaacuacc cccgcuacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgucggcgu ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU59558

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU59579

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU59590

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU59601

<400> 102318
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU59612

<400> 102319
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADU59768

<400> 102320

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102321
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102322
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102323
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADU59772

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102324
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102325
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU59906

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 102326
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADU59916

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 102327
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76756

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102328
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<212> RNA
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hemagglutinin__InfluenzaA__ADU76757

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102329
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102330
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102332
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<212> RNA
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hemagglutinin__InfluenzaA__ADU76762

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102333
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<212> RNA
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hemagglutinin__InfluenzaA__ADU76764

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102334
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADU76765

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102335
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76766

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102336
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76767

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76768

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102338
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76769

<400> 102338

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102339
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76770

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102340
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76771

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102341
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76772

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 102342
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76774

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102343
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76775

<400> 102343
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102344
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76776

<400> 102344
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102345
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76777

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102346
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76778

<400> 102346
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102347
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76779

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102348
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76780

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102349
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADU76781

<400> 102349

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102350
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76782

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102351
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADU76784

<400> 102351
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102352
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76785

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102353
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76786

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102354
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76787

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102355
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76788

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102356
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76789

<400> 102356

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102357
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76790

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102358
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76791

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102359
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76792

<400> 102359
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102360
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU76793

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102361
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADU85911

<400> 102361
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacaagc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcgaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

caccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg acaccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagaa gaaggagguc cucgucaucu ggggcaucca ccacccccc 600

accuccaccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagcgcuu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca uggacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

ggcaucaucg ucuccgacgc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuucc ucgagggcgg cuggaccggc 1080

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aucgaguccc ucaacaacaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgcccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV17283

<400> 102362
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102363
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV17293

<400> 102363
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102364
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV17303

<400> 102364
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaagg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102365
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV17313

<400> 102365
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102366
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV17323

<400> 102366
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaggg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuacgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102367
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADV17333

<400> 102367

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagaa ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu ccuccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu acuacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgucaucu acuccaccgu cgccuccucc 1620

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<210> 102368
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADV19019

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102369
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADV41677

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102370
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADV58939

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacgagacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102371
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADV69074

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

gaccccgaga acggcaccug cuaccccggc uacuucaccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacaccaacg acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccucc 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucuuccucg ucgcccucgg cgccaucugc uucuggaugu gcuccaacgg cucccuccag 1680

ugcaagaucu gcaucuga 1698

<210> 102372
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADV69075

<400> 102372
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

gaccccgaga acggcaccug cuaccccggc uacgucaccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacaccaacg acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102373
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV69077

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

gaccccgaga acggcaccug cuaccccggc uacuucaccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacaccaacg acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102374
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADV69078

<400> 102374

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgccgccgg cgucuccgcc uccugcuccc acaacggcga gaaguccuuc 480

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uacgagaacg acaaggagaa ggagguccuc auccucuggg gcguccacca ccccccccaac 600

aucgagaacc agcgcacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uacgagaaca acaacgagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cauguccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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aucgagaacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaagcu cuccaagucc 540

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auccgcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102378
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADV69083

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<210> 102379
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ADV69084

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<210> 102380
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADV69085

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<210> 102381
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADV69086

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gucuuccucg ucucccucgg cgccaucugc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADV69087

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cucaagggca ucgccccccu ccagcucggc uccugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucaccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaacgg cgucuccucc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag gacggccucu accccaaccu cuccaagucc 540

uacaccaaca agaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADV69088

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucaccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cauguccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADV69089

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag aaguccuggu ccuacaucgu cgagaccccc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acgucaacgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu caccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucggcgacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cauguccucc 660

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

cucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102386
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADV69091

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<210> 102388
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hemagglutinin__InfluenzaA__ADV69093

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hemagglutinin__InfluenzaA__ADV69094

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca acgucaccgg cgucuccucc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacaccaaca agaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc ucaucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgagaacg acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagga guccuccugg 420

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hemagglutinin__InfluenzaA__ADV69107

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hemagglutinin__InfluenzaA__ADV69109

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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hemagglutinin__InfluenzaA__ADV76642

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<210> 102412
<211> 1701
<212> RNA
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<220>
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<211> 1701
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<220>
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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<400> 102421

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugcucc 180

cucaacggca agauccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccaagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccaaga acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg acaccacccg cggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccaccccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

uccaaguacu acaagcgccu cacccccgag aucgucgccc gccccaaggu ccgcgagcag 720

gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaagaaggg cuccuccucc 840

ggcaucaugc gcuccgacgc ccagguccac aacugcacca ccaagugcca gaccccccac 900

ggcgcccuca agggcaaccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac ccagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

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uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADW09101

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADW09111

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgaccagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ADW09120

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADW09131

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102426
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW09153

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102427
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<212> RNA
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hemagglutinin__InfluenzaA__ADW09164

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 102428
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADW09186

<400> 102428

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADW09197

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gaugcgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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hemagglutinin__InfluenzaA__ADW09252

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<212> RNA
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hemagglutinin__InfluenzaA__ADW09274

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<210> 102436
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<212> RNA
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hemagglutinin__InfluenzaA__ADW09285

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__ADW09296

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<212> RNA
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<212> RNA
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADW10527

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cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__ADW10593

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hemagglutinin__InfluenzaA__ADW10604

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<212> RNA
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADW10798

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADW10809

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__ADW10820

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
<212> RNA
<213> Artificial Sequence

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<400> 102464

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ADW10853

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 102466
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW10864

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 102467
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW10875

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucgucgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102468
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW10886

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aucaucaacu ccaacgcccc cauggacaag ugcgacgcca agugccagac cccccgcggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102469
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW10897

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggaggucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102470
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADW23115

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW54481

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADW54512

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW54527

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102474
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW65825

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102475
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADW82135

<400> 102475

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102476
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua caccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102480
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADW82198

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102481
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW82208

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 102482
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW82218

<400> 102482

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 102483
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW82228

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__ADW82238

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102487
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW82268

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102488
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW93760

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102489
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW95319

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 102490
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADW95332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 102491
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX21078

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua caccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102492
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX21088

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua caccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

auccgcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102493
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADX21098

<400> 102493

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcucca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102494
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADX36109

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccaggacggc accuccuccg ccugcauccg ccgcuccaag 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102495
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96278

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102496
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96288

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102497
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96298

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 102498
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96308

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102499
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96318

<400> 102499
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102500
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96328

<400> 102500

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102501
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102502
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96357

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96367

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102504
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96378

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102505
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96398

<400> 102505
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96408

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102507
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADX96427

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102508
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ADX96437

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 102509
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96447

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102510
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96497

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102511
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccac cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102512
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96517

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 102513
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96527

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102514
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96537

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102515
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<212> RNA
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hemagglutinin__InfluenzaA__ADX96547

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102516
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96557

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102517
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADX96587

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102518
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96597

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102519
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96607

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102520
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96627

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 102521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96637

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102522
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96647

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102523
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hemagglutinin__InfluenzaA__ADX96657

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102524
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102525
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccguc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102526
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96687

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102527
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADX96697

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102528
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96707

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102529
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADX96727

<400> 102529

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102530
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96737

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu caaggagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa ggccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucaucucccu cggcgccauc uccuucugga ugugcuccac cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102531
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102532
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgucccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102533
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgaguccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccac cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102534
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADX96777

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgucccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102535
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96787

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102536
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96797

<400> 102536

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102537
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96807

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuucu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102538
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96817

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96837

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccac cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102540
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96847

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102541
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96857

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96867

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96877

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgucaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96897

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96907

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acuccggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccuccaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96927

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggaccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 102547

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96947

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96957

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96967

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX96977

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102552
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96987

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX96997

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102554
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX97007

<400> 102554

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacgc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX97018

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX97028

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag cagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98640

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102558
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98650

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98665

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 102560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98675

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98695

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98729

<400> 102562
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98739

<400> 102563
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98748

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADX98758

<400> 102565

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98767

<400> 102566
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98777

<400> 102567
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98785

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cggcggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98792

<400> 102569
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98806

<400> 102570
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98818

<400> 102571
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagcgcaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98828

<400> 102572

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98843

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcggcucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98853

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaucgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98860

<400> 102575
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102576
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98870

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102577
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98880

<400> 102577
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98890

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98900

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98910

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aucuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98920

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98930

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADX98940

<400> 102583

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucggccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX98950

<400> 102584
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucaucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98960

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98970

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaggg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98980

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102588
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX98990

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102589
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX99000

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102590
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX99581

<400> 102590

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102591
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADX99592

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102592
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADX99603

<400> 102592
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

gccaucaacu ccucccuccc cuaccagaac auccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
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hemagglutinin__InfluenzaA__ADX99614

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccucccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADX99625

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucggcgcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccaagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

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cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102596
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADX99647

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102597
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADX99680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

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ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102598
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX99702

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102599
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX99843

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102600
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADX99854

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aacuacaacc gccgcuucac ccccgagauc gccgagcgcu ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 102620
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__ADY38760

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<212> RNA
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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102628
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ADZ47858

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 102629
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__ADZ53100

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucaacgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 102630
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ADZ53123

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 102631
<211> 1701
<212> RNA
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<220>
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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102632
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADZ53127

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102633
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADZ53131

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102634
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADZ53133

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102635
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ADZ53135

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102636
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADZ53138

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102637
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ADZ53140

<400> 102637

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102638
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ADZ93496

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102639
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA04365

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gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

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gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc cgucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 102654
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEA72750

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102655
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEA72759

<400> 102655

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102656
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA72777

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102657
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA72787

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102658
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73288

<400> 102658
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102659
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73299

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102660
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73310

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102661
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73321

<400> 102661
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucacccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102662
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73332

<400> 102662

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102663
<211> 1701
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hemagglutinin__InfluenzaA__AEA73343

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102664
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102665
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102666
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102667
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102668
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102669
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73409

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73420

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73452

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73463

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102673
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEA73474

<400> 102673

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102674
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73485

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102675
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73496

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102676
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73507

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 102677
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73518

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102678
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73529

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102679
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEA73540

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102680
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102681
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102682
<211> 1698
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102683
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73584

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102684
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73595

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102685
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73606

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

auggccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102686
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73617

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__AEA73781

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102702
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73791

<400> 102702
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102703
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73801

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102704
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73811

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73821

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucucccu cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102706
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73831

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73841

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73851

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEA73861

<400> 102709

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc gagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102710
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEA73871

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102712
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102713
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73901

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102714
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73911

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102715
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73921

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73931

<400> 102716

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA73961

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73971

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA73981

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102720
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEA73991

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA74001

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacu ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA74011

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagcgcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102723
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA74021

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102724
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEA74031

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102725
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEA74035

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102726
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEA77299

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102727
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB21326

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB21338

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB21348

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102731
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB40206

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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cgcugcaaca ucugcaucug a 1701

<210> 102732
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB66895

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102733
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEB71102

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aacgucccg ucaccuccuc cgucgaccuc gucgagacca accacaccgg caccuacugc 180

ucccucggcg gcaucucccc cguccaccuc ggcgacugcu ccuucgaggg cuggaucguc 240

ggcaaccccg ccugcgccuc caaccucggc auccgcgagu gguccuaccu caucgaggac 300

cccuccgccc cccacggccu cugcuacccc ggcgagcucg acaacaacgg cgagcuccgc 360

caccucuucu ccggcauccg cuccuucucc cgcaccgagc ucaucgcccc caccuccugg 420

ggcgagguca acgacggcgu caccgccgcc ugccaggaca agggcgccuc cuccuucuac 480

cgcaaccucg ucugguucgu cgagcgcggc aacaaguacc ccgucauccg ccgcaccuac 540

aacaacacca ccggccgcga cguccucguc aucuggggca uccaccaccc cgucuccacc 600

gacgaggccc gcaagcucua cgccaaggac aaccccuaca cccucgucuc caccuccucc 660

ugguccccgca aguacaaccu cgagaccggc acccgccccg gcuacaacgg ccagaagucc 720

uggaccaaga ucuacuggua ccucaugcac cccggcgacu ccaucuccuu cgaguccaac 780

ggcggccucc ucgcccccaa guacggcuac aucaucgagg aguacggcaa gggccgcauc 840

uuccaguccc gcauccgcau cgccaagugc aacaccaagu gccagaccuc cgucggcggc 900

aucaacacca acaagaccuu ccagaacauc gagcgcaacg cccucggcga cugccccaag 960

uacaucaagu ccggccagcu caagcucgcc accggccucc gcaacguccc cgccaucucc 1020

aaccgcggcc ucuucggcgc caucgccggc uucaucgagg gcggcuggcc cggccucauc 1080

aacggcuggu acggcuucca gcaccagaac gagcagggca ugggcauggc cgccgacaag 1140

gaguccaccc agaaggccau cgaccagauc accaccaaga ucaacaacau caucgagaag 1200

augaacggca acuacgacuc cauccgcggc gaguucuccc aggucgagca gcgcaucaac 1260

augcucgccg accgcaucga cgacgccguc accgacgucu gguccuacaa cgccaagcuc 1320

cucguccucc ucgagaacga caagacccuc gacaugcacg acgccaacgu ccgcaaccuc 1380

cacgaccagg uccgccgcgu ccuccgcacc aacgccaucg acgagggcaa cggcugcuuc 1440

gagcuccucc acaagugcaa cgacuccugc auggagacca uccgcaacgg caccuacaac 1440

cacaucgagu acgaggagga guccaagcuc aagcgccagg agaucgaggg caucaagcuc 1560

aaguccgacg acaacgucua caaggcccuc uccaucuacu ccugcaucgc cuccuccauc 1620

guccucgucg gccucauccu cgccuucauc auguggccu gcuccuccgg caacugccgc 1680

uucaacaucu gcaucuga 1698

<210> 102734
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71896

<400> 102734

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc ccgcuacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaacu ccaacgcccc caugggcaag ugcgacgcca agugccagac cccccagggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71916

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEB71925

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71936

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102738
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71947

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102739
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71958

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccgac 600

aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 102740
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEB71969

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEB71980

<400> 102741
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102742
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEB71992

<400> 102742
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc ccgcuacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaacu ccaacgcccc cauggacaag ugcgacgcca agugccagac cccccgcggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102743
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC13313

<400> 102743
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc ccgcuacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaacu ccaacgcccc cauggacaag ugcgacgcca agugccagac cccccgcggc 900

gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC46553

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccuucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEC46555

<400> 102745

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgagggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccuucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC46557

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccuucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC53259

<400> 102747
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC53269

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cuccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEC53279

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEC53289

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEC53299

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEC53327

<400> 102752

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102753
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC53347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC53404

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102755
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEC53414

<400> 102755
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102756
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEE27177

<400> 102756
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEE27187

<400> 102757
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102758
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEE27207

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caaggucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64752

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg uccgcuccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg ccgccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64762

<400> 102760
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacucccu ccuccccgcc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcgccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucucca ccgucuccuc ccucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acacccucaa gggcgucacc gucuccugcu cccacggcgg caaguccucc 480

uucuaccgca accuccucug gcucaccaag accggcgacu ccuaccccaa gcucaacaac 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

uccuccaacg agcagcaguc ccucuaccac aacgucaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgccc gccccaaggu ccgcgaccag 720

cccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau ccucuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugcac gagugcaaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgaccu caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccguccg cgacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64784

<400> 102761
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64834

<400> 102762
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccuccg ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEG64845

<400> 102763

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64856

<400> 102764
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccguca ugcgcuccga cgccuccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG64867

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gucaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccaa cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG64878

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccaa cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cuucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64922

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 102770
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64933

<400> 102770

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 102771
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64944

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 102772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEG64955

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102773
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcugcaaca ucugcaucug a 1701

<210> 102774
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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cgcugcaaca ucugcaucug a 1701

<210> 102775
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacaug ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102776
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEG64999

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65010

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65021

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65032

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102780
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEG65043

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102781
<211> 1701
<212> RNA
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<220>

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<400> 102781

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102782
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 102784
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102785
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEG65098

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65109

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102787
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEG65120

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102788
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEG65131

<400> 102788

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102789
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEG65142

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102790
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65153

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65164

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102792
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65175

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcgagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcgaca ucugcaucug a 1701

<210> 102793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEG65186

<400> 102793
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102794
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65197

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102795
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65208

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102796
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102797
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacgucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102798
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacgucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 102801
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEG65285

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102802
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102803
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102812
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102815
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 102817
<211> 1701
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<210> 102818
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102819
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 102822
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102826
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102827
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102828
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102834
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<220>
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hemagglutinin__InfluenzaA__AEG65681

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102835
<211> 1701
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<220>

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102836
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102837
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102838
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102839
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102840
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG65780

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aucgucaaga ccaucaccaa cgacaagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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<210> 102841
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEG65813

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG79801

<400> 102842

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG79807

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEG79835

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59363

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102846
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59367

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cugggcccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59369

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102848
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59371

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102849
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59373

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcgagg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102850
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59375

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102851
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59379

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59381

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEH59383

<400> 102853

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102854
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59385

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacaucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102855
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59387

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102856
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102857
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59397

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccucccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 102858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59399

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102859
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59403

<400> 102859
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgcccccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59407

<400> 102860

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59409

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59411

<400> 102862
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggaccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59413

<400> 102863
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102864
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59585

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59587

<400> 102865
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgucguc ggcaaggagu ucaacccccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59589

<400> 102866
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59591

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgucguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59593

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59595

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59597

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEH59599

<400> 102871

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59601

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aacugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 102873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59604

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEH59614

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH59624

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc cuucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102876
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH77259

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__AEH77270

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102878
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEH77279

<400> 102878

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102879
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI29215

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 102880
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI29225

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 102881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI29591

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<210> 102882
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI54347

<400> 102882
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102883
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 102884
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

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<210> 102886
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI54446

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102891
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI54457

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI54468

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102893
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI54479

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102894
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AEI54490

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102895
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI54501

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102896
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI59979

<400> 102896

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102897
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI59990

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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hemagglutinin__InfluenzaA__AEI60001

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cuccuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102902
<211> 1701
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aucgucaaga ccaucaugaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 102903
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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102904
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEI60109

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca caucaagggc 1560

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<210> 102905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86734

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86764

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 102907

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86784

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102909
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86794

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102910
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86804

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaugug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccgccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102911
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86814

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102912
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86824

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI86834

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102914
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hemagglutinin__InfluenzaA__AEI86854

<400> 102914

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102915
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<212> RNA
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hemagglutinin__InfluenzaA__AEI86864

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102916
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEI86874

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 102917
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEI86894

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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<210> 102918
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86904

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 102919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86914

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuacccccg ccucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI86934

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102922
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<212> RNA
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hemagglutinin__InfluenzaA__AEI86944

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102923
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 102924
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102925
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 102926
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEI86994

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102927
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI87004

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102928
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI87014

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102929
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<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102930
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEI87044

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 102931
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102932
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI87074

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 102935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI87104

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 102936
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEI91963

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102937
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI91977

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI91978

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cgcccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI91998

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102940
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEI91999

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccucaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102941
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEI92018

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10400

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 102943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEJ10410

<400> 102943

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

uccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 102944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEJ10420

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEJ10430

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEJ10440

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcagau ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10450

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10480

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag uccgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEJ10490

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggccgcugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10500

<400> 102950

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10510

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10520

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaacuacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

uccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10530

<400> 102953
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102954
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10540

<400> 102954
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10550

<400> 102955
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10570

<400> 102956
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ10580

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ36302

<400> 102958
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccuaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagcg ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ36312

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acauccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37853

<400> 102960
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEJ37863

<400> 102961

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaagcu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37873

<400> 102962
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37883

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37893

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacaa gcccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37903

<400> 102965
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37923

<400> 102966
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca ucgagcgcau ggccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37943

<400> 102967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102968
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEJ37953

<400> 102968

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102969
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEJ37963

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccacca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEJ37973

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEJ37983

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 102972
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21369

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca ccaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 102973
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21380

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 102974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21396

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgaga uggagcgcaa guccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21406

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccauguccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEK21416

<400> 102976
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEK21426

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg uccgcuccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21436

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEK21456

<400> 102979

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg agaacgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21466

<400> 102980
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21476

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK21486

<400> 102982
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 102983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEK28774

<400> 102983
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucc accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102984
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEK28785

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aucgucaaga ccaucaccaa cgaccagguc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 102985
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aucgucaaga ccaucaccaa cgacaagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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gaccucuucg ucgagcgcuc caaggccuac ggcaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 102987
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 102988
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102990
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102991
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 102999
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagga caagaagugg 300

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103006
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hemagglutinin__InfluenzaA__AEK29070

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103007
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 103008
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hemagglutinin__InfluenzaA__AEK29092

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103010
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AEK29191

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AEK29202

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103015
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<400> 103015

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 103016
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103019
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

gaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103021
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103022
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEK98382

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<210> 103023
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEK98402

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103032
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccucc gcuucaagua ccccgcccuc 540

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cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugcg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccucc gcuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggagcuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103034
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL11687

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103035
<211> 1692
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEL31632

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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aaccagcgcc ucgucccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<212> RNA
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hemagglutinin__InfluenzaA__AEL89297

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL89307

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 103038
<211> 1701
<212> RNA
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<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103039
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89327

<400> 103039
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103040
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89337

<400> 103040

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89357

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89367

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103044
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89391

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89401

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103046
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89411

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL89421

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL89441

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103049
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL89451

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103050
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL89461

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103051
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEL89471

<400> 103051

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103052
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89481

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 103053
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89491

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89501

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacgaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103055
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89511

<400> 103055
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103056
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89521

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89531

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89541

<400> 103058

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89551

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89561

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccgagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89571

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103062
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89581

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89591

<400> 103063
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89601

<400> 103064
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caaggucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89611

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89621

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89631

<400> 103067
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89641

<400> 103068
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEL89651

<400> 103069

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89661

<400> 103070
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89671

<400> 103071
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag uccgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89691

<400> 103072
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89701

<400> 103073
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcagaa ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89711

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcagaa ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89721

<400> 103075
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89741

<400> 103076

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89751

<400> 103077
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89761

<400> 103078
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89771

<400> 103079
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103080
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89781

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac ggcaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89791

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89801

<400> 103082
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucauccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89812

<400> 103083
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgucauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89832

<400> 103084
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89842

<400> 103085
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL89852

<400> 103086
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEL93568

<400> 103087

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL93578

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL93598

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL93618

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL93628

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL93638

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEL94870

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

aagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AEL95426

<400> 103094

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103095
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<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaccaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103096
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEL99674

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caucuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103098
<211> 1689
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM53455

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gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 103099
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM53468

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uccuccguca agcacuucga gaagguccgc auccucccca aggacggcug gacccagcac 420

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

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aucaugaucg ccggcaucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 103100
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM60037

<400> 103100
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103101
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM60058

<400> 103101
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gucaccguca cccacuccgu caaccuccuc gaggaguccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggacguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103102
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AEM60069

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103103
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92308

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagcgcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccgaga accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103104
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEM92318

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 103105

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92348

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaagau gcgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92368

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92378

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucaacu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92407

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac ccacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccau gggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92417

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92428

<400> 103112

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92438

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103114
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92448

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103115
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92458

<400> 103115
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103116
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaaggaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaucugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaucugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92498

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92518

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caaggucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92528

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEM92548

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92558

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEM92568

<400> 103123

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103124
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEM92578

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103129
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103137
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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 103138
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<212> RNA
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hemagglutinin__InfluenzaA__AEN55493

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 103139
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<210> 103140
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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hemagglutinin__InfluenzaA__AEN68910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103153
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 103154
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 103155
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__AEN68918

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gucaccguca cccacuccgu caaccuccuc gaggacaaga acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103157
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEN68919

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103158
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68920

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103159
<211> 1701
<212> RNA
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<220>

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<400> 103159

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103160
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68922

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 103161
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68923

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEN68924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEN68925

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucgagacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103164
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<220>
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hemagglutinin__InfluenzaA__AEN68926

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cgccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103165
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEN68927

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103166
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEN68928

<400> 103166

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

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<210> 103167
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68930

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103169
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68931

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103170
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN68932

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 103171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEN69426

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103172
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEN69475

<400> 103172
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEN69481

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103174
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01032

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucgac aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01033

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103176
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01034

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103177
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01035

<400> 103177

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 103178
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01036

<400> 103178
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103179
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01037

<400> 103179
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103180
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01038

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103181
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEO01039

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103182
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEO01040

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103183
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01041

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103184
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01042

<400> 103184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 103186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01044

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01045

<400> 103187
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccucgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103188
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01046

<400> 103188
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103189
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01047

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103190
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01048

<400> 103190
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugcaaga ucugcaucug a 1701

<210> 103191
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01049

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103192
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01050

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103193
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01051

<400> 103193
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103194
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01052

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103195
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01053

<400> 103195

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103196
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01054

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103197
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01055

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103198
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01056

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103199
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01057

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103200
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01058

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 103201
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01059

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103202
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01060

<400> 103202

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103203
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01061

<400> 103203
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103204
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01062

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103205
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01063

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103206
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01064

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103207
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01065

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103208
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01066

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103209
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01067

<400> 103209
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag auggccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103210
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01068

<400> 103210
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103211
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01069

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103212
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01070

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103213
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 103213

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01073

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103215
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01074

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01075

<400> 103216
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01076

<400> 103217
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103218
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01077

<400> 103218
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg agaacgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103219
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01078

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01079

<400> 103220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01080

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01081

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01082

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103224
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01083

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01084

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103226
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01085

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103227
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01086

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103228
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01087

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103229
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01088

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103230
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01089

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103231
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01090

<400> 103231

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103232
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01091

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103233
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01092

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agcgcguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103234
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01093

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103235
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01094

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103236
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01095

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103237
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01096

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103238
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01097

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103239
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01098

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103240
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01099

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103241
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01100

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103242
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01101

<400> 103242
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103243
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01102

<400> 103243
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103244
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01103

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103245
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01104

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103246
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01105

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccuccaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103247
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01106

<400> 103247
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103248
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01107

<400> 103248
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103249
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01108

<400> 103249

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01109

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AEO01110

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103253
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hemagglutinin__InfluenzaA__AEO01112

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 103254
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEO01113

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 103255
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01114

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<210> 103256
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01115

<400> 103256

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<210> 103257
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01116

<400> 103257
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103258
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01117

<400> 103258
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103259
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01118

<400> 103259
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103260
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01119

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103261
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01120

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103262
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01121

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103263
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01122

<400> 103263
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103264
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01123

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103265
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01124

<400> 103265
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103266
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01125

<400> 103266
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103267
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01126

<400> 103267

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103268
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01127

<400> 103268
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103269
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01128

<400> 103269
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103270
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01129

<400> 103270
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103271
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01130

<400> 103271
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103272
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01131

<400> 103272
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103273
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01132

<400> 103273
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103274
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01133

<400> 103274

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103275
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01134

<400> 103275
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103276
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01135

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103277
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01136

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103278
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01137

<400> 103278
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103279
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01138

<400> 103279
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103280
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01139

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103281
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01140

<400> 103281
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103282
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01141

<400> 103282
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103283
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01142

<400> 103283
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103284
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01144

<400> 103284
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103285
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01145

<400> 103285

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103286
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01146

<400> 103286
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caaccccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103287
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01147

<400> 103287
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103288
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01148

<400> 103288
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103289
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01149

<400> 103289
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103290
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01150

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103291
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01151

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103292
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01152

<400> 103292

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103293
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01153

<400> 103293
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccaacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103294
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01154

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103295
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01155

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103296
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01156

<400> 103296
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103297
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01157

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103298
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01158

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103299
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01159

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103300
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01160

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103301
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01161

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01162

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01163

<400> 103303

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103304
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01164

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103305
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01165

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa guucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103306
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01166

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103307
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01167

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103308
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01168

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103309
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01169

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 103310
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01170

<400> 103310

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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cagugccgca ucugcaucug a 1701

<210> 103311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01171

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103312
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01172

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01173

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcggcaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103314
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01174

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01176

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01177

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01179

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01180

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01181

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103320
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01182

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103321
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01183

<400> 103321

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103322
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103323
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01185

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103324
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01186

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103325
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01187

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 103326
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01188

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 103327
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01189

<400> 103327
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103328
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEO01191

<400> 103328

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103329
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hemagglutinin__InfluenzaA__AEO01192

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103330
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hemagglutinin__InfluenzaA__AEO01193

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 103334
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hemagglutinin__InfluenzaA__AEO01197

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103335
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01198

<400> 103335
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103336
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01200

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01201

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggagaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103338
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01202

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103339
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01203

<400> 103339

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103340
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01204

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103341
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01205

<400> 103341
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103342
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01206

<400> 103342
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103343
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01207

<400> 103343
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103344
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01208

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103345
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01209

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103346
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01210

<400> 103346

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103347
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01211

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103348
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01212

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103349
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01213

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103350
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01214

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103351
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01215

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103352
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01216

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

gucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103353
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01217

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103354
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01218

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103355
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01219

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103356
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01220

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103357
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01221

<400> 103357

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103358
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01222

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103359
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01223

<400> 103359
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103360
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01224

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ccgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103361
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01225

<400> 103361
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccguc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01226

<400> 103362
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgacggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103363
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01227

<400> 103363
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103364
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01228

<400> 103364

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103365
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01229

<400> 103365
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103366
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01230

<400> 103366
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagcgcaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103367
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01231

<400> 103367
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103368
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01232

<400> 103368
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103369
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01233

<400> 103369
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103370
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01234

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103371
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01235

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103372
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01236

<400> 103372
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103373
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01237

<400> 103373
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103374
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01238

<400> 103374
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103375
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01240

<400> 103375

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103376
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01241

<400> 103376
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103377
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01242

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103378
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01244

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103379
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01245

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103380
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01247

<400> 103380
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcauccuca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103381
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01248

<400> 103381
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103382
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01249

<400> 103382

augaaggcca uccucgucgu ccuccucuac accuucgcca ccgccaacgc cgacacccuc 60

ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103383
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01250

<400> 103383
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103384
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01251

<400> 103384
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103385
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01252

<400> 103385
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103386
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01253

<400> 103386
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103387
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01254

<400> 103387
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103388
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01256

<400> 103388
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103389
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01257

<400> 103389
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103390
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01258

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103391
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01259

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103392
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01260

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103393
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01261

<400> 103393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccggcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103394
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01262

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103395
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01263

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 103396
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01264

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103397
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01265

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103405
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hemagglutinin__InfluenzaA__AEO01273

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103406
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01274

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103407
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01275

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103408
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01276

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103409
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01277

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103410
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01278

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103411
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 103411

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 103412
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01282

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103413
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<220>
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hemagglutinin__InfluenzaA__AEO01283

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103414
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01284

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103415
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01285

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103416
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01286

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103417
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01287

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01288

<400> 103418

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 103419
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01289

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103420
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01290

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu cuccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103421
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01291

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103422
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01292

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01294

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01295

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac uacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103425
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01296

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103426
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01297

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103427
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01298

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 103428
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01299

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103429
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 103429

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01301

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01302

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01303

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01304

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caagggcguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01305

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103435
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01306

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103436
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01307

<400> 103436

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01308

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103438
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01309

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103439
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01310

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgaccgcgg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103440
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01311

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103441
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01312

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103442
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01313

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103443
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01314

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103444
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01315

<400> 103444
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaaccgcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103445
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01316

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103446
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01317

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103447
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01318

<400> 103447

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103448
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01319

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103449
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01321

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg cccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103450
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01322

<400> 103450
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103451
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01323

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103452
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01324

<400> 103452
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103453
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01325

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103454
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01326

<400> 103454

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag gacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103455
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01327

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103456
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01328

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103457
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01330

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103458
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01331

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103459
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggccuc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucguca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103460
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01333

<400> 103460
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103461
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01334

<400> 103461
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103462
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01335

<400> 103462
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01336

<400> 103463
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01337

<400> 103464
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103465
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01338

<400> 103465

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103466
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01339

<400> 103466
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01340

<400> 103467
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01341

<400> 103468
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01342

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103470
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01343

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01344

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01345

<400> 103472

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01346

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103474
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103475
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01348

<400> 103475
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103476
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01349

<400> 103476
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaga acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103477
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01350

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103478
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01351

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103479
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01352

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103480
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01353

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucuuccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103481
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01354

<400> 103481
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103482
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01355

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103483
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01356

<400> 103483

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103484
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01358

<400> 103484
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ugcgucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103485
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01359

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103486
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01360

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103487
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01361

<400> 103487
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103488
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01362

<400> 103488
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103489
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01363

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103490
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01365

<400> 103490

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcuc cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103491
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01366

<400> 103491
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcucca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103492
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01367

<400> 103492
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103493
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01368

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaacac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103494
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01369

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103495
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01370

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103496
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01371

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103497
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01372

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103498
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01373

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103499
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01374

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguaca ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103500
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103502
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01377

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01378

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 103504
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01379

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103505
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__AEO01381

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AEO01382

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103508
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hemagglutinin__InfluenzaA__AEO01383

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<212> RNA
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hemagglutinin__InfluenzaA__AEO01384

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cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 103510
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hemagglutinin__InfluenzaA__AEO01385

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hemagglutinin__InfluenzaA__AEO01386

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<210> 103512
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hemagglutinin__InfluenzaA__AEO01387

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<210> 103513
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<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103514
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01389

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103515
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01390

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucgagacc 660

ucccgcuacu ccaagaaggu caagcccgag aucgccaucc gcccccgcgu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggucgcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103516
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01391

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103517
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01392

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103518
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01393

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103519
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103520
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01395

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuuccucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 103521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01396

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103522
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<220>
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hemagglutinin__InfluenzaA__AEO01397

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacaccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103523
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01398

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccaacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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hemagglutinin__InfluenzaA__AEO01399

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103525
<211> 1701
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hemagglutinin__InfluenzaA__AEO01402

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 103526
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01403

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103527
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01404

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 103528
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 103529
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01407

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103530
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01408

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103531
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01409

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103532
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103533
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01411

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103534
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01412

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103535
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01413

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103536
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01414

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103537
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01416

<400> 103537

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103538
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01418

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01419

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103540
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01420

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaguacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103541
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01421

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01422

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacc ucuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01423

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01424

<400> 103544

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103545
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01425

<400> 103545
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01426

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01427

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103548
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01428

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01429

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01430

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgacgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01431

<400> 103551
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103552
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01432

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01434

<400> 103553
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc gagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103554
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01435

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01436

<400> 103555

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01437

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01438

<400> 103557
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01440

<400> 103558
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01441

<400> 103559
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgacggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01442

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagca cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01443

<400> 103561
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01444

<400> 103562

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01445

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01446

<400> 103564
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01447

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccau cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103566
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01448

<400> 103566
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01449

<400> 103567
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01450

<400> 103568
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01451

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01452

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccga ggccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01453

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcgcgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01454

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaccaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01455

<400> 103573

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01456

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggaccgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01457

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01458

<400> 103576
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01459

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01461

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01462

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01463

<400> 103580

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01464

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggaccgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01465

<400> 103582
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01466

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103584
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01467

<400> 103584
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01469

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01470

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucau cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103588
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01471

<400> 103588
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103589
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01472

<400> 103589
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103590
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01473

<400> 103590
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103591
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01474

<400> 103591

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103592
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01475

<400> 103592
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103593
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01476

<400> 103593
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103594
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01477

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103595
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01478

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103596
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01479

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103597
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01480

<400> 103597
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103598
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01482

<400> 103598

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103599
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01483

<400> 103599
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103600
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01484

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103601
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103602
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

acccucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103603
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01488

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103604
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01489

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu ccgccccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103605
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01490

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103606
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01491

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gucaccguca cccacuccgu caaccuccuc gaggacaagu acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103607
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01492

<400> 103607
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AEO01493

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103610
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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<210> 103612
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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hemagglutinin__InfluenzaA__AEO01499

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<210> 103614
<211> 1701
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hemagglutinin__InfluenzaA__AEO01500

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103615
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01501

<400> 103615
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01502

<400> 103616

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01503

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103618
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01505

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01506

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103620
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01507

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103621
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01508

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103622
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01510

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103623
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hemagglutinin__InfluenzaA__AEO01511

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103624
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01512

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac aagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103625
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01513

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103626
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AEO01514

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gucaccguca cccacuccgu caaccuccuc gaggacaugc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103627
<211> 1701
<212> RNA
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<400> 103627

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103628
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01516

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 103629
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01517

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103630
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01518

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gaucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103631
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01519

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu ccgccccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103632
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01520

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103633
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01521

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggaggu cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103634
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01522

<400> 103634

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103635
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01523

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103636
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01524

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103637
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01525

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuacccccg ccucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103638
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01526

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103639
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO01527

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103640
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 103642
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01531

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103643
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01532

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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hemagglutinin__InfluenzaA__AEO01533

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 103645
<211> 1701
<212> RNA
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<400> 103645

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc cgcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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hemagglutinin__InfluenzaA__AEO01535

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AEO01536

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__AEO01539

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AEO01540

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 103652
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01541

<400> 103652

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 103653
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01542

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103654
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01543

<400> 103654
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103655
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01544

<400> 103655
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103656
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01545

<400> 103656
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acuccggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucgucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103657
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01546

<400> 103657
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103658
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01547

<400> 103658
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103659
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01548

<400> 103659
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103660
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01549

<400> 103660
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103661
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01550

<400> 103661
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103662
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01551

<400> 103662
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103663
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01552

<400> 103663

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103664
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01553

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103665
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01554

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103666
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01555

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103667
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01557

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103668
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01558

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103669
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01559

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccag gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01560

<400> 103670

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01561

<400> 103671
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01562

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01563

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103674
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01564

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103675
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01565

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103676
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01566

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103677
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01567

<400> 103677
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103678
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01568

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103679
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01569

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103680
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01570

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103681
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01571

<400> 103681

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103682
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01572

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103683
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01573

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 103684
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01574

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103685
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01575

<400> 103685
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103686
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01576

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103687
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01577

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103688
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01578

<400> 103688

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103689
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01579

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103690
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01581

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103691
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01582

<400> 103691
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103692
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01583

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103693
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01584

<400> 103693
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103694
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01585

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103695
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01586

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103696
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01587

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103697
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01588

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103698
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01589

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103699
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01590

<400> 103699

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103700
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01591

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103701
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<220>
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hemagglutinin__InfluenzaA__AEO01592

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103702
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<212> RNA
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hemagglutinin__InfluenzaA__AEO01593

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103703
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01594

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103704
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01595

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01596

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103706
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01597

<400> 103706

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 103707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01598

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa cggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01599

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01600

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103710
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01601

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01602

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103712
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01603

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103713
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01604

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103714
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01605

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103715
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01606

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01607

<400> 103716
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO01608

<400> 103717

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01609

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01610

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgcg ucugcaucug a 1701

<210> 103720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01611

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01612

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgccacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01613

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103723
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO01614

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103724
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01615

<400> 103724

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uacuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103725
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO01616

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01617

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01619

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103728
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01620

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01621

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01625

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccagg uccucgacgg cgagaacugc 240

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103731
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO01636

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 103733
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcguccgc 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcguccgc 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<212> RNA
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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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<212> RNA
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hemagglutinin__InfluenzaA__AEO37530

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<210> 103739
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEO72176

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ccgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103740
<211> 1704
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEO88980

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103741
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89021

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cccaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccucc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103742
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89030

<400> 103742

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccguc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cguccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103743
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89048

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacguca ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

cucaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103744
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89065

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccguc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccucc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccuccgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103745
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89082

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgacaccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca acaaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103746
<211> 1704
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89091

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accgucaccc acgcccagaa cauccucgag aagacccaca acggcaagcu cugcgacauc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccacc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcagg ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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ucccucgccc ucgccaucau gauggccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 103747
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89100

<400> 103747
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuuccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

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ggcugcuucg aguucuacca caagugcgac gacgagugca uggaguccgu caagaacggc 1500

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gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103748
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89109

<400> 103748
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucgucac caagaucgcc acccgcccca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103749
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89127

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgcc gccgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

aucaagcucg aguccauggg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103750
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89145

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucggcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acaaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucac caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcagg agaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg gcgucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgccgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103751
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89163

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau cgacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cuggcccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagggc aacgccuacc ccaccaucaa gaaguccuac 540

aacaacacca acaaggagga ccuccucauc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cguccgcaac 1500

ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg uccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 103752
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89172

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accgucaccc acgcccagaa cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccacuc caacgacgcc 600

accgagcaga ucaagcucua ccagaacccc accaccuacg ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc uccaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103753
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEO89181

<400> 103753

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 103754
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89192

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucaacggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 103755
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89203

<400> 103755
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucaacggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103756
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89213

<400> 103756
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucaacggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103757
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89224

<400> 103757
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucaacggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103758
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89235

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacguca ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccgacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

aagcgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 103759
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89246

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccgacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 103760
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89257

<400> 103760

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc uccaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 103761
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89268

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 103762
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEO89279

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucggcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acaaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcagg agaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg gcgucaagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 103763
<211> 1704
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hemagglutinin__InfluenzaA__AEO89289

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucggcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acaaguucau caacgucccc gaguggucu acaucgucga gaaggucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc aagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacaacguc 600

gccgagcagg agaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg gcgucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccgcua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgccgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

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<211> 1704
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEO89300

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagcacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucaacggc 1560

gucaagcucg aguccauggg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucuccuucu ggaugugcuc caacggcucc 1680

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<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaccaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcaac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103767
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ38187

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgccuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 103768
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEQ38188

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103769
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEQ38189

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagccc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgucc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103771
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<220>

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<400> 103771

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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<210> 103775
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<212> RNA
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hemagglutinin__InfluenzaA__AEQ38195

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hemagglutinin__InfluenzaA__AEQ38196

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<210> 103777
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hemagglutinin__InfluenzaA__AEQ38197

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<210> 103778
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEQ38198

<400> 103778

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 103779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ62909

<400> 103779
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ62910

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccgcc 300

ucccccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaugug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gucccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

guccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccagcu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ62911

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103782
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ62912

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEQ62915

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AER08646

<400> 103784
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AER08648

<400> 103785
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AER08652

<400> 103786
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccuccga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 103787
<211> 1701
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hemagglutinin__InfluenzaA__AER08654

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103788
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103789
<211> 1701
<212> RNA
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<400> 103789

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103790
<211> 1701
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cuccgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AER08668

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103792
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AER08670

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AER08672

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103794
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AER08674

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auggucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103795
<211> 1701
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hemagglutinin__InfluenzaA__AER08676

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103796
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103797
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103798
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103799
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AER08684

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 103800
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AER08686

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 103801
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AER08688

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103802
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AER08690

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 103810
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccuccugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 103811
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 103812
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

aaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 103813
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 103814
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<210> 103815
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hemagglutinin__InfluenzaA__AET10100

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103816
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AET10101

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103817
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<212> RNA
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hemagglutinin__InfluenzaA__AET10102

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103818
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET10103

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103819
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET10104

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucggcaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103820
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET10105

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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ggcaacuaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aagugcaaca ucugcaucug a 1701

<210> 103823
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET10108

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103824
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET10109

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AET10110

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 103828
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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccacccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__AET50441

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__AET50442

<400> 103832

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccacccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<212> RNA
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hemagglutinin__InfluenzaA__AET84163

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucuccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__AET84174

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu cacccgcaag aacggccucu accccacccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucaacgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AET84207

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucaacgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucuccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 103838
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hemagglutinin__InfluenzaA__AET84229

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccacccu cuccaagucc 540

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 103840
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<212> RNA
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hemagglutinin__InfluenzaA__AET84251

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 103841
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AET84262

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccugccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 103842
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<212> RNA
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hemagglutinin__InfluenzaA__AET84284

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103843
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

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<400> 103843

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacucca ucaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 103844
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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hemagglutinin__InfluenzaA__AET84361

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 103846
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 103847
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET84394

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gcgcuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 103848
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AET84405

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<210> 103849
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AET84416

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 103850
<211> 1698
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hemagglutinin__InfluenzaA__AET84427

<400> 103850

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AET84438

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgucc agaagacccu cuacaacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AET84449

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AET98600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 103854
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEV76874

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cagugccgca ucugcaucug a 1701

<210> 103855
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW10574

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<210> 103856
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW10584

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 103857
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103858
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10604

<400> 103858
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103859
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10614

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10624

<400> 103860
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEW10634

<400> 103861

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10644

<400> 103862
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10654

<400> 103863
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 103864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10664

<400> 103864
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103865
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW10674

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccga ggccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10684

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10694

<400> 103867
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10704

<400> 103868

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10724

<400> 103869
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10734

<400> 103870
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10744

<400> 103871
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccucuccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103872
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10754

<400> 103872
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccucuccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10764

<400> 103873
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccaacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10774

<400> 103874
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gagugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10784

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103876
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10794

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103877
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10804

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103878
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10814

<400> 103878
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103879
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10824

<400> 103879
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103880
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10834

<400> 103880
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10844

<400> 103881
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103882
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10854

<400> 103882
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucaccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103883
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10864

<400> 103883
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103884
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10874

<400> 103884
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103885
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10884

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103886
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10894

<400> 103886

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103887
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10904

<400> 103887
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103888
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10914

<400> 103888
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103889
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10924

<400> 103889
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103890
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10934

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103891
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10944

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10954

<400> 103892
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103893
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10964

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103894
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10974

<400> 103894
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103895
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW10984

<400> 103895
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103896
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEW10994

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103897
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<212> RNA
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<400> 103897

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103898
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<212> RNA
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hemagglutinin__InfluenzaA__AEW11014

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103899
<211> 1701
<212> RNA
<213> Artificial Sequence

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<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11024

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 103900
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEW11034

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103901
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11044

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103902
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11054

<400> 103902
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103903
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11064

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103904
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11074

<400> 103904

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11084

<400> 103905
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11094

<400> 103906
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11104

<400> 103907
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103908
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11114

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103909
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11124

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguucg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103910
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11134

<400> 103910
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaaca aggaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103911
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11144

<400> 103911
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103912
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11154

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11164

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103914
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11174

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103915
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEW11184

<400> 103915

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103916
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11194

<400> 103916
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11204

<400> 103917
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11214

<400> 103918
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11224

<400> 103919
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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11234

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11244

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11254

<400> 103922

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

gccuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaggu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11263

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11273

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103925
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11283

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103926
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11293

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103927
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW11303

<400> 103927
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgcg ucugcaucug a 1701

<210> 103928
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW11313

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103929
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 103930
<211> 1701
<212> RNA
<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccaucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 103931
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW22718

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103932
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW22720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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<210> 103933
<211> 1701
<212> RNA
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<220>

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<400> 103933

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 103934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW22724

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25297

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gaucccccggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgc 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25306

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25315

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucuggg ucugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25331

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccccc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25349

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103940
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25367

<400> 103940

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagcg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25377

<400> 103941
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gccugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25385

<400> 103942
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucccccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25416

<400> 103943
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103944
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25446

<400> 103944
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acaagcaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25454

<400> 103945
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25462

<400> 103946
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

cccuacacca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25472

<400> 103947
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25482

<400> 103948
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaag 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

ggcggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagc ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25492

<400> 103949
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacaucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25501

<400> 103950
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug ccucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEW25509

<400> 103951

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25519

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacaccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEW25528

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagcgccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25545

<400> 103954
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcucc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucgucaugg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25555

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac uacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25564

<400> 103956
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgcccuca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccggcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25573

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25582

<400> 103958

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucaucc ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacggcc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25590

<400> 103959
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccaguccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gaggcccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccuccacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25600

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25620

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103962
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25629

<400> 103962
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccga ggccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25637

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25646

<400> 103964
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25654

<400> 103965
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccc ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25662

<400> 103966
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25669

<400> 103967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgagg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25678

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu ccgcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEW25687

<400> 103969

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25696

<400> 103970
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccuu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW25706

<400> 103971
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103972
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEW91908

<400> 103972
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu ccgcaaccuc 1380

uacgacaagg uccgccucca gcucaaggac aacgccaagg agcucggcaa cggcugcuuc 1440

gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaucuacca gauccucucc aucuacucca ccgucgccuc cucccucguc 1620

cucgccauca ugauggccgg ccucucccuc uggaugugcu ccaacggcuc ccuccagugc 1680

cgcaucugca ucuga 1695

<210> 103973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX09175

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucgccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25795

<400> 103974
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25797

<400> 103975
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25798

<400> 103976

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25800

<400> 103977
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25803

<400> 103978
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25808

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103980
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25810

<400> 103980
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25811

<400> 103981
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa ggccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25814

<400> 103982
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25816

<400> 103983
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25818

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX25824

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucgaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 103986
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX33420

<400> 103986
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 103987
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AEX33453

<400> 103987

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103988
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX33464

<400> 103988
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 103989
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX33475

<400> 103989
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<212> RNA
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<400> 103994

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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hemagglutinin__InfluenzaA__AEX33574

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 103997
<211> 1701
<212> RNA
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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 103998
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104000
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104002
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hemagglutinin__InfluenzaA__AEX33880

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104003
<211> 1698
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hemagglutinin__InfluenzaA__AEX33913

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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<210> 104004
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__AEX33924

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

ucccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgccaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 104005
<211> 1701
<212> RNA
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<220>

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104012
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<400> 104012

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<210> 104013
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AEX34221

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugcg acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104022
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34243

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104024
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 104026
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX34318

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104027
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34329

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cgucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga gggcgucaag 1560

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<210> 104028
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34352

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104033
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caccucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA

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hemagglutinin__InfluenzaA__AEX34462

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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hemagglutinin__InfluenzaA__AEX34473

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEX34495

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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hemagglutinin__InfluenzaA__AEX34506

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgucc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacguca aguccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34528

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacguca aguccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34539

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104041
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

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<400> 104041

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104042
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34561

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104043
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34572

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104044
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacguca aguccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgucc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacguca aguccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34616

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34638

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<212> RNA
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hemagglutinin__InfluenzaA__AEX34650

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcaacc agcgcucccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104051
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34661

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104052
<211> 1698
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34672

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AEX34779

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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hemagglutinin__InfluenzaA__AEX34790

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<210> 104058
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hemagglutinin__InfluenzaA__AEX34801

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<210> 104059
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<212> RNA
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<210> 104060
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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caacuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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<210> 104061
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hemagglutinin__InfluenzaA__AEX34845

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga gggcgucaag 1560

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<210> 104062
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34856

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga gggcgucaag 1560

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<210> 104064
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34878

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104065
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34889

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 104066
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34900

<400> 104066

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<210> 104067
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34911

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cucggcucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104068
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hemagglutinin__InfluenzaA__AEX34922

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104069
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34933

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104070
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34944

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104071
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<212> RNA
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hemagglutinin__InfluenzaA__AEX34955

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104072
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<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104073
<211> 1698
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX34977

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104074
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX34988

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104075
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX34999

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcgacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaagaa ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__AEX35010

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<400> 104077

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104080
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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<210> 104082
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<220>
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hemagglutinin__InfluenzaA__AEX35087

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<210> 104083
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEX35098

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__AEX35142

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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<210> 104088
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AEX35153

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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<212> RNA
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hemagglutinin__InfluenzaA__AEX35164

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<210> 104090
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<212> RNA
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hemagglutinin__InfluenzaA__AEX35175

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<210> 104091
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX35186

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104092
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX35197

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104093
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX35208

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104094
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<212> RNA
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hemagglutinin__InfluenzaA__AEX35219

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104095
<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgucc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX35241

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104097
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX35263

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104098
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX35274

<400> 104098
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccggcaag uccggccucu accccaaccu cuccaagucc 540

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104099
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AEX35285

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104108
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104110
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 104111
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104112
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104113
<211> 1698
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104114
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AEX35450

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104115
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hemagglutinin__InfluenzaA__AEX35461

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104116
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104117
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 104118
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104119
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 104120
<211> 1701
<212> RNA
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<400> 104120

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<210> 104121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AEX35527

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104122
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEX35549

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104123
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hemagglutinin__InfluenzaA__AEX35560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgucggcau cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104124
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104127
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104128
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<212> RNA
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hemagglutinin__InfluenzaA__AEX35615

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104129
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104130
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

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uccaccaaga ucucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caagaccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104155
<211> 1701
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aucgucaaga ccaucaccaa cgaccagacc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104160
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<212> RNA

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AEX36465

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104162
<211> 1701
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hemagglutinin__InfluenzaA__AEX36476

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaacgacca gaucuucccc uacgcccagg ccuccggccg caucaccguc 660

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AEX36542

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104171
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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hemagglutinin__InfluenzaA__AEX63617

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aacuccaaga acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

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<210> 104178
<211> 1701
<212> RNA

<213> Artificial Sequence

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<400> 104185

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<212> RNA
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hemagglutinin__InfluenzaA__AEY69197

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104209
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg uuccucugga ucuccuucgc caucuccugc 1620

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac ggcaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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<210> 104212
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104214
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<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104215
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104216
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEY70311

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104217
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AEY70333

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104218
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hemagglutinin__InfluenzaA__AEY70344

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg uuccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104219
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104220
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<212> RNA
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hemagglutinin__InfluenzaA__AEY70365

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104221
<211> 1701
<212> RNA
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<220>

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<400> 104221

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB18656

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB40597

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 104224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB40598

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 104225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104226
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hemagglutinin__InfluenzaA__AFB40600

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104227
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<212> RNA
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hemagglutinin__InfluenzaA__AFB40601

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccgagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104228
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFB40602

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104229
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<212> RNA
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hemagglutinin__InfluenzaA__AFB40603

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104230
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB40604

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104231
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB70138

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 104232
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB70145

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 104233
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFB70154

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AFB70156

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104238
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaugc gccccaaggu ccgcgaccag 720

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<400> 104239

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 104240
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hemagglutinin__InfluenzaA__AFB70187

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<210> 104241
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFB70197

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104242
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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104245
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hemagglutinin__InfluenzaA__AFB70247

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<210> 104246
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFB70257

<400> 104246

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<210> 104247
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFB70267

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<210> 104248
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hemagglutinin__InfluenzaA__AFB70277

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104250
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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104251
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 104253
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<212> RNA
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hemagglutinin__InfluenzaA__AFB70337

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 104255
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hemagglutinin__InfluenzaA__AFB70347

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<210> 104256
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFB70367

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<400> 104257

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 104261
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<210> 104263
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<210> 104264
<211> 1701
<212> RNA
<213> Artificial Sequence

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 104271
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cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AFB77631

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu caccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 104278
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hemagglutinin__InfluenzaA__AFB77636

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<210> 104279
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hemagglutinin__InfluenzaA__AFB77637

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<210> 104280
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<212> RNA
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hemagglutinin__InfluenzaA__AFB77638

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AFD32428

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcuccgucg ccggcuggcu ccucggcaac cccaugugcg acgaguucau caacgucccc 300

gaguggguccu acaucgucga gaaggccaac cccgucaacg accucugcua ccccggcgac 360

uucaacgacu acgaggagcu caagcaccuc cucucccgca ucaaccacuu cgagaagauc 420

cagaucaucc ccaaguccuc cugguccucc cacgaggccu cccucggcgu cuccuccgcc 480

ugccccuacc agggcaaguc cuccuucuuc cgcaacgucg ucuggcucau caagaagaac 540

uccaccuacc ccaccaucaa gcgcuccuac aacaacacca accaggagga ccuccucguc 600

cucuggggca uccaccaccc caacgacgcc gccgagcaga ccaagcucua ccagaacccc 660

accaccuaca ucuccgucgg caccuccacc cucaaccagc gccucguccc ccgcaucgcc 720

acccgcucca aggucaacgg ccaguccggc cgcauggagu ucuucuggac cauccucaag 780

cccaacgacg ccaucaacuu cgaguccaac ggcaacuuca ucgcccccga guacgccuac 840

aagaucguca agaagggcga cuccaccauc augaaguccg agcucgagua cggcaacugc 900

aacuccgagu gcaucacccc caacggcucc auccccaacg acaagcccuu ccagaacguc 960

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uucaucgaga acggcuggga gggcaugguc gacggcuggu acggcuuccg ccaccagaac 1140

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aucggcucca uccgcaacgg caccuacgac cacgacgucu accgcgacga ggcccucaac 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuucuacg ccgagaugaa guggcuccuc uccaacuccg acaacgccga guuccccccag 540

augaccaagu ccuaccgcaa cccccgcaac aagcccgccc ucaucaucug gggcguccac 600

cacuccggcu ccgccaccga gcagaccaag cucuacggcu ccggcaacaa gcucaucacc 660

gucggcuccu ccaaguacca gcaguccuuc acccccuccc ccggcgcccg cccccagguc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuacca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104300
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aucuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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<210> 104301
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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hemagglutinin__InfluenzaA__AFD63615

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104303
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucgacugga ccggcgucac ccagaacggc accuccucca ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg caaguccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104308
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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<220>

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<400> 104311

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gacgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca caucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

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<210> 104313
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104314
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AFD63780

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104316
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFD63791

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104317
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hemagglutinin__InfluenzaA__AFD63802

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFD63813

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<210> 104319
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104322
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104360
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc ccgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104382
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104399
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccaggac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaacac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104401
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgacucccu cuccaccgcc cgcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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<210> 104402
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104403
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hemagglutinin__InfluenzaA__AFD98310

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 104404
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFD98320

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 104405
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFD98340

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104406
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104407
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<212> RNA
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104410
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104411
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104412
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFD98417

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104413
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFD98428

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFD98439

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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<210> 104415
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<212> RNA
<213> Artificial Sequence

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<210> 104416
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104417
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 104418
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104419
<211> 1701
<212> RNA
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<210> 104420
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFD98503

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104421
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AFD98525

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104430
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF18506

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFF57124

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcagcg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57128

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFF57132

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacgagacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57136

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104435
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFF57144

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgacg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104436
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57148

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgacg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFF57160

<400> 104437

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccgag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104438
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFF57164

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104439
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57168

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104440
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57172

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104441
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57176

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104442
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57184

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccagaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104443
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFF57188

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgacg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104444
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFF60787

<400> 104444

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

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cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 104445
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG29042

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccuuc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104446
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG29044

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104447
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31060

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104448
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFG31070

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104449
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFG31080

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104450
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31100

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104451
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31110

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104452
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31120

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104453
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31130

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AFG31140

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31210

<400> 104461
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104462
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31220

<400> 104462

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31230

<400> 104463
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31240

<400> 104464
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104465
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31250

<400> 104465
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104466
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31260

<400> 104466
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31270

<400> 104467
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31280

<400> 104468
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31290

<400> 104469
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104470
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31300

<400> 104470
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacaucaacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31310

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31323

<400> 104472
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG31333

<400> 104473

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104474
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31343

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104475
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31353

<400> 104475
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104476
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31363

<400> 104476
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104477
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31376

<400> 104477
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104478
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31386

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104479
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31396

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104480
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31406

<400> 104480

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104481
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31416

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104482
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG31426

<400> 104482
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104483
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31436

<400> 104483
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104484
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31446

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104485
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31456

<400> 104485
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104486
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31466

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104487
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31486

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104488
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31496

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104489
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31506

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104490
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31516

<400> 104490
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104491
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG31526

<400> 104491

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104492
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31536

<400> 104492
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104493
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31546

<400> 104493
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104494
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31556

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104495
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31566

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104496
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31586

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104497
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31596

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104498
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31606

<400> 104498

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104499
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG31616

<400> 104499
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104500
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFG31626

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104501
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31636

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104502
<211> 1701
<212> RNA

<213> Artificial Sequence

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31656

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104504
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG31666

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104505
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG71865

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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cgcugcaaca ucugcaucug a 1701

<210> 104506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG71876

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104507
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG71898

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagaa cgagaccugg 300

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uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccggc 480

uccggcuucu ucucccgccu caacuggcuc accaaguccg gcuccaccua ccccguccuc 540

aacgucacca uguccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AFG71920

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104509
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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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ggccccuccu cccgcaucuc caucuacugg accaccguca agcccggcga cauccucauc 780

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<210> 104512
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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

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<210> 104513
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<212> RNA
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<210> 104514
<211> 1701
<212> RNA
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<220>
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<210> 104515
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104518
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104519
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104520
<211> 1701
<212> RNA

<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggccgcau cugcaacucc ccccaccgca uccucgacgg caagaacugc 240

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<210> 104521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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<210> 104522
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104523
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104524
<211> 1701
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hemagglutinin__InfluenzaA__AFG72184

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104526
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104527
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<210> 104528
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFG72228

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 104529
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFG72239

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<210> 104530
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104531
<211> 1701
<212> RNA
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104532
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104533
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104534
<211> 1701
<212> RNA
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuaca ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104535
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104536
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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<210> 104537
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc aacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

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<210> 104538
<211> 1701
<212> RNA

<213> Artificial Sequence

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72460

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFG72504

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca uccgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccggccucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104541
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72515

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

gucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccuccugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaucguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca gaccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104543
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggcgg cgucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca ucuccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72603

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72625

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72636

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72658

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgccccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72680

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaucau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccacccgcc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca accgcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104550
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuucaagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72713

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuucaagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104552
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72724

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72735

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104554
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72757

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg cuccuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72779

<400> 104555
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccacccgcc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu ccggcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104556
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72801

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccgucuc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaucuccauc uacgcccagu ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuccucccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG72812

<400> 104557
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccucaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72823

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccuccac 600

cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acaucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72834

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72845

<400> 104560
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccucccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc cauccacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaagacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72856

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu caucgccucc uccggcaccc ucgaguucac caacgagucc 420

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gacaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caacaagcuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG72867

<400> 104562
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca agaacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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gacaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcaucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104563
<211> 1701
<212> RNA
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<220>

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<400> 104563

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG72933

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccucc gcuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG98819

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagga cgagaccugg 300

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG98830

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ggcaacgaca aguccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG98841

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98852

<400> 104570

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98863

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaccugg 300

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuucc gcaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98874

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98885

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucgacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaccugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggccu cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104574
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98896

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG98907

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98918

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98929

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG98940

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

uucaacugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccgac 480

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104579
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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<211> 1701
<212> RNA
<213> Artificial Sequence

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ggccucuccu ccggcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104581
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG98984

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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg cauggacugc 240

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uucaccugga ccggcgucac ccagaacggc ggcuccaacg ccugcaagcg cggccccgac 480

cgcggcuucu ucucccgccu caacuggcuc uacaaguccg gcaacaccua ccccguccuc 540

aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu ccggcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

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<210> 104582
<211> 1704
<212> RNA
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<220>
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acccucguca agaccaucac caacgaccag aucgagguca ccaacgccac cgagcucguc 180

caguccuccu ccaccggcaa gaucugcaac aacccccacc gcauccucga cggcaucaac 240

ugcacccuca ucgacgcccu ccucggcgac ccccacugcg acggcuucca gaacgagaag 300

ugggaccucu ucgucgagcg cuccaaggcc uucuccaacu gcuaccccua cgacgucccc 360

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<210> 104583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99006

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<210> 104584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 104585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99028

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<210> 104586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

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aacgucgcca ugcccaacaa cgacaacucc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccgaccuc uacguccagg ccuccggcaa ggucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

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ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104588
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99061

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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aacgucacca ugcccaacaa cgacaacucc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacgucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

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ugccccaagu acaucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caacaagguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104589
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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ggccucuccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104590
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99083

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104591
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99094

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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uccuccucca ccggcaagau cugcgacaac ccccaccgca uccucgacgg caucaacugc 240

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cgcugcaaca ucugcaucug a 1701

<210> 104592
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99116

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104593
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104594
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99138

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucgucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccaguccggc ggcuccuccg ccugcaagcg cggcuccgac 480

aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccguccuc 540

aacgucacca ugcccaacaa cggcaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccaaccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcaaccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccgcaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104595
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99149

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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uucaacugga ccggcgucac ccaguccggc ggcuccuacg ccugcaagcg cggcuccgac 480

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccaaccuc uacguccgcg ccuccggccg cgucaccguc 660

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cgccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104596
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99171

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucgucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagucc 420

uucaacugga ccggcgucac ccaguccggc ggcuccuacg ccugcaagcg cggcuccgac 480

aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccguccuc 540

aacgucacca ugcccaacaa cggcaacuuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acaaggagca gaccaaccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcaaccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccgcaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgccgccag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104597
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99182

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104598
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99193

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aacuccuucu ucucccgccu caacuggcuc uacgaguccg aguccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gagaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcccccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg acaugaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104599
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG99204

<400> 104599

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104600
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG99215

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104601
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFG99226

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104604
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cucgucaaga ccaucaccaa cgaccagguc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104605
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104606
<211> 1701
<212> RNA
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<210> 104607
<211> 1701
<212> RNA
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<210> 104608
<211> 1701
<212> RNA
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<210> 104609
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104610
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<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104612
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104613
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104614
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104615
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFG99391

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<210> 104616
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFG99402

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFG99413

<400> 104617

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104618
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFG99424

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104620
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104621
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104622
<211> 1701
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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<210> 104623
<211> 1701
<212> RNA
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<220>
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<210> 104624
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99501

<400> 104624

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<210> 104625
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104626
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 104627
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 104628
<211> 1701
<212> RNA

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104629
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104630
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 104631
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 104632
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<220>
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hemagglutinin__InfluenzaA__AFG99600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aaguccuucu ucucccgccu caacuggcuc cacgaguccg acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg accgcgagca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104635
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

uucaacugga ccggcgucgc ccaguccggc gaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacgaguccg acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104636
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104637
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg acuuccagaa caaggagugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cgcauccaga accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104638
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104639
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104640
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99677

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga cccucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104656
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uccuccauca ugcgcuccga cgccccccauc ggcaccugcu ccuccgagug caucaccccc 900

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104657
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104658
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104659
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104660
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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 104661
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFG99910

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104662
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104663
<211> 1701
<212> RNA
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<210> 104664
<211> 1701
<212> RNA

<213> Artificial Sequence

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aaguccuucu ucucccgccu caacuggcuc cacgaguccg acuacaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104665
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFG99954

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104666
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFG99965

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104667
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104668
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104669
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00021

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFH00032

<400> 104671

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<210> 104672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFH00043

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaguccggc gacuccuacg ccugcaagcg cggcuccguc 480

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca caucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104674
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccagcccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104675
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg acuuccagaa caaggagugg 300

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104676
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104677
<211> 1701
<212> RNA
<213> Artificial Sequence

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104678
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00109

<400> 104678

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuaca ccugcaagcg cggcuccguc 480

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<210> 104679
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFH00120

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uuccuccucu gcgucguccu ccucggcuuc accauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104680
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00131

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuaca ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104681
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00153

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacauccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104682
<211> 1701
<212> RNA

<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaugg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucgc ccagaacggc gacuccuacg ccugcaagcg cggcuccguc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104683
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggccaguccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104684
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH00186

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcuca ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104685
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFH00197

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 104686
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFH00208

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104687
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFH00219

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc aacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104689
<211> 1701
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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 104691
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc aacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgaggac 420

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<210> 104692
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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

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<210> 104693
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<210> 104695
<211> 1701
<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104696
<211> 1701
<212> RNA
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<210> 104697
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104698
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 104699
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104700
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104701
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<210> 104702
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH00395

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<210> 104703
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104704
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104705
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104706
<211> 1701
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104707
<211> 1701
<212> RNA
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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00472

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104709
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH00483

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00494

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00505

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104713
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104714
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<210> 104715
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104716
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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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<210> 104717
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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<210> 104718
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00582

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccgac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104722
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104727
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFH00681

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa ggagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua cuccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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uccaccaagc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu ccggcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104732
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00736

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104733
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<212> RNA
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<210> 104734
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

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aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00769

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgaggac 420

uucaacugga ccggcgucgc ccaguccggc gaguccuaca ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacgaguccg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg accgcgagca gaccucccuc uacauccgcg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104736
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00780

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccgacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

ggcuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuaca ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00802

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFH00813

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

gacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH00824

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFH01407

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFH34940

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccgg cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104743
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<220>

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<400> 104743

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccgcc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH34968

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccgcc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104745
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFH34975

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga acggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104746
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH74464

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74465

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 104748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74477

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74488

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74499

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__AFH74510

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104755
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104758
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104759
<211> 1701
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hemagglutinin__InfluenzaA__AFH74598

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104760
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFH74609

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104761
<211> 1701
<212> RNA
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<220>

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104762
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH74631

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caccaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74642

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74653

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74664

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74675

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104767
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hemagglutinin__InfluenzaA__AFH74686

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104770
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104771
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104772
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104773
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104774
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104781
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<210> 104782
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gaccucuucg ucgagcgcuc caaggccuac ggcaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 104783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74862

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 104784
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104785
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104786
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 104786

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104787
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFH74906

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104788
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFH74917

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFH74928

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104790
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac ggcaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104795
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<210> 104796
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<210> 104797
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<210> 104798
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFJ11728

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104799
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFJ19842

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggcgagau cugcgacucc ccccaccaca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc ccgcgccuac uccaacugcu accccuacga cguccccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104800
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104801
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104802
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ74386

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucaugucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cggcgagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 104803
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hemagglutinin__InfluenzaA__AFJ74407

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104804
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104805
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugggc gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 104808
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<212> RNA

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104809
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104810
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104811
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104812
<211> 1701
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104813
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104814
<211> 1698
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<220>
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hemagglutinin__InfluenzaA__AFJ74653

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104815
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu ccgcaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104816
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<212> RNA
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hemagglutinin__InfluenzaA__AFJ74674

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104817
<211> 1698
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hemagglutinin__InfluenzaA__AFJ74694

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104818
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 104819
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFJ74727

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104820
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFJ74743

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104821
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ74744

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104822
<211> 1698
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hemagglutinin__InfluenzaA__AFJ74760

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104824
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gacaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104826
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa ccgcaagugg 300

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<210> 104827
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104828
<211> 1701
<212> RNA
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<220>
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<210> 104829
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ75036

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104831
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucucccgc gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104834
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFJ75449

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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<212> RNA
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hemagglutinin__InfluenzaA__AFJ75460

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104836
<211> 1698
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aucggcgacc agaugacccu cuaccacaag aagaacgccu acgucuccgu cgucuccucc 660

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<210> 104837
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gacuacccca aguacuccga ggaguccaag cucucccgcg agcgcaucga cggcgucaag 1560

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<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1698
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hemagglutinin__InfluenzaA__AFJ75615

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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hemagglutinin__InfluenzaA__AFJ75630

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFJ75662

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<210> 104845
<211> 1698
<212> RNA
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<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca ccuacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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gagaaccuca acaagaaggu cgacgacggc uucaucgacg ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaagac ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104846
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ76119

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104847
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFJ76131

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104848
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa ggccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 104849
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ76186

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 104850
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ76203

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 104851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFJ76213

<400> 104851

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<210> 104852
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77408

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc aaguccuacu ccugcaagcg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc aacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

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aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104860
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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ77517

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccaacg ccugcaagcg ccgcuccaug 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccacccagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca uccgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104862
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77528

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caaggagggc 420

uucaacugga ccggcgucgc ccaggacggc accuccuacg ccugcaagcg cggcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacguccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc gacaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104863
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77550

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagaccc gcggcaucuu cggcgccauc gccggcuuca ucgagaacgg cugggagggc 1080

auggucgacg gcugguacgg cuuccgccac cagaacuccg agggcaccgg ccaggccgcc 1140

gaccucaagu ccacccaggc cgccaucaac cagaucaacg gcaagcucaa ccgccucauc 1200

gagaagacca acgagaaguu ccaccagauc gagaaggagu ucuccgaggu cgagggccgc 1260

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cuccucugcg ucguccuccu cggcuucauc auguggccu gccagaaggg caacauccgc 1680

ugcuccaucu gcaucuga 1698

<210> 104864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77561

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaccucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucuacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104865
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77572

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

cccuccaccg acuccgacca gaucucccuc uacgcccagg ccuccggccg cgucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuccggccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagaccc gcggcaucuu cggcgccauc gccggcuuca ucgagaacgg cugggagggc 1080

auggucgacg gcugguacgg cuuccgccac cagaacuccg agggcaccgg ccaggccgcc 1140

gaccucaagu ccacccaggc cgccaucaac cagaucaacg gcaagcucaa ccgccucauc 1200

gagaagacca acgagaaguu ccaccagauc gagaaggagu ucuccgaggu cgagggccgc 1260

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gagcuccucg ucgcccucga gaaccagcac accaucgacc ucaccgacuc cgagaugaac 1380

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ugcuucaaga ucuaccacaa gugcgacaac gccugcaucg gcuccauccg caacggcacc 1500

uacgaccacg acgucuaccg cgacgaggcc cucaacaacc gcuuccagau caagggcguc 1560

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cuccucugcg ucguccuccu cggcuucauc auguggccu gccagaaggg caacauccgc 1680

ugcuccaucu gcaucuga 1698

<210> 104866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77583

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gucaaggaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77594

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gucaaggaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77605

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gccgucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104869
<211> 1701
<212> RNA
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<220>

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<400> 104869

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

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uccuccauca ugcgcuccaa cgccuccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104870
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFJ77627

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gucaaggaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caccaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ77649

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucaa gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ77660

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77671

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77682

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104876
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ77693

<400> 104876

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccaa cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ucgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104877
<211> 1701
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hemagglutinin__InfluenzaA__AFJ77704

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104878
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<212> RNA
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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccaa cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 104879
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgacaacauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 104880
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104881
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104882
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFJ77759

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104883
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFJ77781

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104884
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104885
<211> 1701
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hemagglutinin__InfluenzaA__AFJ77803

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104889
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104890
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<210> 104892
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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 104893
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 104894
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<212> RNA
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<210> 104895
<211> 1701
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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 104896
<211> 1701
<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 104897
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104898
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ77957

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104899
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFJ77968

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104900
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AFJ78067

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 104910
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaaga ucucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104911
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 104912
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104914
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104915
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 104916
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78166

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78188

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104919
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78210

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 104920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78221

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 104921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78232

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcaagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78243

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFJ78254

<400> 104923

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AFJ78265

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104926
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 104927
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

aucggcgacc agcgcgccau cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104928
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<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 104929
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 104930
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__AFJ78342

<400> 104930

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<210> 104931
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag aacggccucu accccaaccu cuccaagucc 540

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccaccaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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hemagglutinin__InfluenzaA__AFJ78518

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hemagglutinin__InfluenzaA__AFJ78529

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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<210> 104956
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78650

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccucc 600

aucuccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 104957
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78661

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78681

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 104959

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78701

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 104961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78711

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 104962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78721

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78731

<400> 104963
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcuccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78741

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78751

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78761

<400> 104966

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78771

<400> 104967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78781

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78791

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104970
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78801

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78811

<400> 104971
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78821

<400> 104972
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78831

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78841

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacu ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78851

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78861

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugccgc 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFJ78881

<400> 104977

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78891

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFJ78911

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ78921

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFJ97567

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccuccuu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14115

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14131

<400> 104984

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14139

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 104986
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFK14148

<400> 104986
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104987
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFK14157

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 104988
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104989
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104990
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFK14184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 104991
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14193

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 104992
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14202

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 104993
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14211

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagugccgca ucugcaucug a 1701

<210> 104994
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hemagglutinin__InfluenzaA__AFK14220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgccuccuc cuucgagcgc uacgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104995
<211> 1701
<212> RNA
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<400> 104995

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 104996
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 104997
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 104998
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14272

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaccggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 104999
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFK14314

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105000
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14323

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 105001
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105002
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14341

<400> 105002

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagaag acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105003
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14350

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105004
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcgccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagaag acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105005
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14395

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaga acggcaugug cugcccccgc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105006
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14431

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuuccucg acuacgagga gcuccgcaag 360

cagcucuccu ccgucuccuc cuucgagcgc gucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14456

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14465

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105009
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14536

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccuac 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__AFK14586

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105012
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccaagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgg cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc aacuucaucg acuucgagga gcucaagaag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<400> 105013

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1701
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hemagglutinin__InfluenzaA__AFK14621

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 105015
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<212> RNA
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hemagglutinin__InfluenzaA__AFK14630

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105016
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK14639

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105017
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK14661

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105018
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14670

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105019
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14678

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105020
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14688

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucc acgacgagga gcuccgcaag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa ggccggcucc 840

ggcaucauca uccucgacac ccccguccac gacuggaaca ccaccugcga gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105021
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14697

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105022
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14713

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105023
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14722

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 105024
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14731

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcaag 360

cagcucuccu ccgucuccuc cuucgagcgc gucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14740

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105026
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105027
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105028
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14779

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105030
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14788

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105031
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcaag 360

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<210> 105032
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK14814

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuacgagcgc uacgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105033
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK14831

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucuccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105034
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK14839

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105035
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14847

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgccuccuc cuucgagcgc uacgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14868

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14884

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105038
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK14892

<400> 105038

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105039
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14901

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105040
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14919

<400> 105041
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105042
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK14929

<400> 105042
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK25599

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105044
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK25601

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgucacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK25603

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105046
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK25605

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg uccgcuccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74526

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74534

<400> 105048
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105049
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<212> RNA
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<220>

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<400> 105049

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105050
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK74554

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105051
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105052
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK74575

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105053
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK74585

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74595

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 105055
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74605

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105056
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74625

<400> 105057
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74635

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74645

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105060
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74655

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74665

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74675

<400> 105062
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74685

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74695

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105065
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK74705

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74715

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFK74725

<400> 105067

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74735

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74745

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74755

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74765

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74775

<400> 105072
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74785

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74795

<400> 105074

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74805

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74815

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74825

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105078
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74835

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74845

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105080
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFK74895

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74905

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74915

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74925

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucguccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74935

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFK74945

<400> 105085

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74955

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK74965

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74975

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74985

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK74995

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK75005

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK75015

<400> 105092

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcgucug a 1701

<210> 105093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK75025

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105094
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK75035

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFK75045

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105096
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105097
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK75065

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105098
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105099
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFK75085

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105100
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105101
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK75105

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 105102
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK77857

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105103
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<400> 105103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105104
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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK77887

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105106
<211> 1701
<212> RNA
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gucaccguca cccacuccau caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105107
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFK78028

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 105108
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 105109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM45476

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM45487

<400> 105110

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105111
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM45489

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM45494

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM68954

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacucccu ccuccccgcc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcgccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

cagcucuccu ccgucuccuc ccucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acacccucaa gggcgucacc gccuccugcu cccacggcgg caaguccucc 480

uucuaccgca accuccucug gcucaccaag accgaggacu ccuaccccaa gcucuccaac 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

uccuccgacg agcagcaguc ccucuaccac aacgucaacg ccuacgucuc cgucgucucc 660

uccaacuaca acggccgcuu cacccccgag aucgccgccc gccccaaggu ccgcaaccag 720

cccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugcac gagugcaaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa cauccccucc 1020

auccaguucc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgaccu caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac aagugcaugg aguccguccg caacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105114
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM68965

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagggc 420

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ggccucuccu ccggcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

ugccccaagu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aaggccggcu ucaucgagaa cggcugggag 1080

ggcaugaucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgcguc 1200

aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105115
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM68987

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugcu ccuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM71720

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM71731

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM71754

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgccc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105119
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hemagglutinin__InfluenzaA__AFM71768

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgccc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105120
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg agcucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105121
<211> 1701
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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccaggacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuucccc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgccauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105122
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccuccugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cuccgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccuac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuucccc uacgcccagg ccuccggccg caucaccguc 660

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ugcccccgcu acaucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucucccucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105123
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM71846

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca ccccuccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<210> 105124
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM71857

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM71868

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM71879

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccgacg agcagcaguc ccucuaccac aacgucaacg ccuacgucuc cgucgucucc 660

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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uccuccgacg agcagcaguc ccucuaccac aacgucaacg ccuacgucuc cgucgucucc 660

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gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucaaccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aacgucacca ugcccaacaa cggcaaguuc gacaagcucu acaucugggg cauccaccac 600

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccgccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcaaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acgucaccaa gggcgucacc gccgccugcu cccacaaggg caaguccucc 480

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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hemagglutinin__InfluenzaA__AFM72087

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucau caacgagaac 420

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aacuccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuacg ccugcaagcg ccgcuccguc 480

aaguccuucu ucucccgccu caacuggcuc cacaagcucg aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuaccgccc cuggguccgc 720

ggcgucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

aagugcaaca ucugcaucug a 1701

<210> 105151
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc caccagcuca aguaccgcua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105152
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc caccagcuca aguaccgcua ccccgcccuc 540

aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaagucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105153
<211> 1698
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag aaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 105154
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccgucuc caacggcacc 120

cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105155
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFM72257

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105156
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM72268

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105157
<211> 1701
<212> RNA
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<400> 105157

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__AFM72290

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cucgucaaga ccaucaccaa cgaccacauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucgc ccagaacggc accuccuccg ccugcaagcg ccgcuccauc 480

aaguccuucu ucucccgccu caacuggcuc caccagcuca aggacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuccaagca cuggguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuaccgccc ccgcguccgc 720

gacaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aaguccuucu ucucccgccu caacuggcuc acccaccuca aguacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuaccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105163
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105164
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 105165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105166
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM72378

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccagcuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccgucaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcuaccgccc ccgcguccgc 720

aacaucccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccgucaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcuaccgccc ccgcguccgc 720

aacaaccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105168
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72400

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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccuccac 600

cccggcaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105169
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaucgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccagucca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

cccgucaccg acaacgacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg acuucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105170
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM72422

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105171
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72433

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105172
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM72444

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgccgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM72455

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccagcuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcuuccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccaagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<211> 1698
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggccg ccucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc ccucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AFM72532

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggccg ccucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AFM72543

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggccg ccucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AFM72554

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggccg ccucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cgaggucaag 1560

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<210> 105181
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM72565

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105182
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFM72576

<400> 105182

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105183
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__AFM72799

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca aggccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca aggccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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<210> 105185
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__AFM72821

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugccuc 180

cucaagggca aggcccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucuccaag gaguccuggu ccuacaucgu cgagcgcccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uacaagaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaugacccu cuaccacaag gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucucccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 105186
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72852

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaccuu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105187
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72862

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaccuu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105188
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72872

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105189
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM72883

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AFM72971

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuucccc uacgcccagg ccuccggccg caucaccguc 660

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucucccucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105198
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccuccg ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc ccgcgccuac uccaacugcu accccuacga cguccccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105201
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<212> RNA
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hemagglutinin__InfluenzaA__AFM73025

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgacg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105202
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgacg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

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<210> 105203
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFM73045

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105204
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM73055

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucgag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

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<210> 105205
<211> 1701
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM73065

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag gagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM73477

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccuccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac caucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucaaccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucaac ggcaucacca acaaggucaa cuccgucauc 1200

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auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105207
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM78567

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc ucggcucccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cauccgcaac 1500

ggcaccuaca acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau caugauggcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 105208
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFM78646

<400> 105208
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaggg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105209
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFM85179

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca cccccccaac 600

aucggcgacc agcgcacccu cuacuacacc gagaacgccu acgucuccgu cgucuccucc 660

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 105210
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN11846

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

uucaacugga ccggcgucgc ccaggacggc aaguccuacg ccugcaagcg cggcuccguc 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105211
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 105211

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105212
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17381

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105213
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17391

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17401

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105215
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17411

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17421

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17431

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105218
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17441

<400> 105218

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaaggcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105219
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17451

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105220
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17467

<400> 105220
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105221
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17477

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105222
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17487

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105223
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17497

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17507

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17517

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105226
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17527

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105227
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17537

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105228
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN17547

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc aucuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105241
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcccccaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105252
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hemagglutinin__InfluenzaA__AFN17767

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105253
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hemagglutinin__InfluenzaA__AFN17774

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105254
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN17783

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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<210> 105256
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17803

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105257
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17813

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105258
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17823

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105259
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17833

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105260
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hemagglutinin__InfluenzaA__AFN17843

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105261
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<212> RNA
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hemagglutinin__InfluenzaA__AFN17853

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105262
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN17863

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105263
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc ggcuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105264
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN17883

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105265
<211> 1701
<212> RNA
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<220>

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<400> 105265

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105266
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN17903

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105267
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN17919

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105276
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105277
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105278
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105279
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105280
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18078

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<210> 105281
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN18088

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<210> 105282
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18098

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cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgccg ucgagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105283
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hemagglutinin__InfluenzaA__AFN18105

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105285
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105286
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<212> RNA
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hemagglutinin__InfluenzaA__AFN18119

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105287
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

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<210> 105288
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18133

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105289
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hemagglutinin__InfluenzaA__AFN18135

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<210> 105290
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18137

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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hemagglutinin__InfluenzaA__AFN18139

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaggg ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105293
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<212> RNA
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hemagglutinin__InfluenzaA__AFN18148

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105294
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18155

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105295
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105296
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18159

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cuccaagucc 480

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105297
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18164

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucaucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccgucu acuccaccgu cgccuccucc 1620

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<210> 105298
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18171

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acuccggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaagug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucaag gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105299
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18176

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105300
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18183

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccauccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucauggu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105301
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 105301

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18200

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105303
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18207

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaagu cccucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18214

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105305
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18224

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105306
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18231

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105307
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18233

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105308
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18243

<400> 105308

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105309
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18245

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105310
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18255

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18260

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105312
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18267

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18269

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105314
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18271

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105315
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18273

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18280

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18303

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105318
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18305

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gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN18307

<400> 105319

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105320
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18312

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cucguccucg ucaucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105321
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18319

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gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__AFN18324

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105324
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105325
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105326
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN18364

<400> 105326

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105327
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105328
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<212> RNA
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hemagglutinin__InfluenzaA__AFN18381

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 105329
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN18390

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagauccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105330
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18400

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaaggcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgucggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105331
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105332
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18420

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105333
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18430

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105334
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18440

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105335
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18450

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105336
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18460

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN18470

<400> 105337

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105340
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105342
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105343
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<212> RNA
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hemagglutinin__InfluenzaA__AFN18521

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105344
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18528

<400> 105344

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105345
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18531

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucau cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__AFN18557

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__AFN18559

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hemagglutinin__InfluenzaA__AFN18561

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<210> 105352
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hemagglutinin__InfluenzaA__AFN18563

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18565

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

auggagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105354
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18570

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccguc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105355
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 105355

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105356
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18590

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105357
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18600

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagaa ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ugcuucgagu ucuaccacaa gugcgacaac gccugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105358
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18610

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105359
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18617

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaagc gcgaggagau cgacggcguc 1560

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<210> 105360
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18622

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105361
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN18629

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18634

<400> 105362

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105363
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18644

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105364
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18654

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105365
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18664

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105366
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18674

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105367
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18684

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105368
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18694

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__AFN18704

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105371
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105372
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105373
<211> 1701
<212> RNA
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<220>

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<400> 105373

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga cccucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105374
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18742

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105375
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105376
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18757

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgccgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105377
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105378
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105379
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18778

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105381
<211> 1701
<212> RNA
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<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105382
<211> 1701
<212> RNA
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<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105383
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN18799

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<210> 105384
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18809

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aacugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__AFN18830

<400> 105392
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgccgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105393
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18832

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105394
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18834

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105395
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18849

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgucgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105396
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN18856

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105397
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18858

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105398
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18860

<400> 105398

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105399
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18865

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105400
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<212> RNA
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hemagglutinin__InfluenzaA__AFN18875

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg cccagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105401
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN18885

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccaaccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

acccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugcaaga ucugcaucug a 1701

<210> 105402
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18892

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105403
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18894

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105404
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18903

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugguccgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105405
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18910

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105406
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18912

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105407
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18917

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccggca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105408
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18927

<400> 105408
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105409
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 105409

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa gaucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105410
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18952

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaaccgcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105411
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18957

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105412
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18964

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105413
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18974

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccauguccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgacgaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18979

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105415
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18982

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105416
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18984

<400> 105416

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105417
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18986

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18988

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105419
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN18993

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105420
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN18999

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105421
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19006

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105422
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19026

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19036

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105425
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19053

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105426
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19063

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105427
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN19070

<400> 105427

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105428
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19076

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaaggac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105429
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19082

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19088

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19097

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19104

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19113

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19119

<400> 105434

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105435
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19125

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105436
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19134

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19144

<400> 105437
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105438
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19154

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105439
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19164

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105440
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105441
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19184

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105442
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19194

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105443
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19203

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105444
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19213

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105445
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105446
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19233

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105447
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hemagglutinin__InfluenzaA__AFN19243

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccag gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105448
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105449
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105450
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19269

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105451
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19279

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105452
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19286

<400> 105452

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105453
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hemagglutinin__InfluenzaA__AFN19295

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105454
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19305

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105455
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19315

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105456
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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hemagglutinin__InfluenzaA__AFN19335

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105458
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19344

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105459
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19351

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105460
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19355

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105461
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19357

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105462
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19361

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105463
<211> 1701
<212> RNA
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<220>

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<400> 105463

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19365

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105465
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

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<210> 105466
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105467
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19373

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19375

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19377

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105470
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19379

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105485
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AFN19465

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca ggucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 105508
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105510
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hemagglutinin__InfluenzaA__AFN19483

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105512
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105514
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<212> RNA
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hemagglutinin__InfluenzaA__AFN19493

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 105515
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105516
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19497

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105517
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN19499

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105518
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hemagglutinin__InfluenzaA__AFN19501

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 105520
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 105521
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 105522
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105524
<211> 1701
<212> RNA
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<210> 105525
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105526
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105527
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 105528
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105529
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105530
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19531

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105531
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19533

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105532
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19535

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105533
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19537

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AFN19539

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105538
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hemagglutinin__InfluenzaA__AFN19549

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca agggcgagau cugcaacucc ccccaccaga uccucgacgg cggcaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105539
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19551

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105540
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19553

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 105541
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19555

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105542
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19557

<400> 105542

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 105543
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105544
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca ggucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105545
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105546
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19565

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 105547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cgcugcaaca ucugcaucug a 1701

<210> 105548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19569

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19571

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu uccgcauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcccc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua cuccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105552
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__AFN19581

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105555
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19583

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105556
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19587

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<220>
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hemagglutinin__InfluenzaA__AFN19589

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105558
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105559
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgucaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 105560
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19601

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 105563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19607

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105564
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19609

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105565
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19611

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucgucg agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105566
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105567
<211> 1701
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105568
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105569
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105570
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19629

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN19631

<400> 105571

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19633

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105573
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFN19635

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagc ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19637

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagc ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105575
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19639

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105576
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19643

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19645

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<210> 105579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19647

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19649

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19653

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagc ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105582
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19663

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca ggucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19667

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19669

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccaac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19671

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19674

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105588
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19676

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105589
<211> 1701
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<220>

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<400> 105589

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca ggucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105590
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccaac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aagugcaaca ucugcaucug a 1701

<210> 105591
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19684

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105592
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacaucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105593
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19688

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 105594
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19690

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105595
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19692

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105596
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19694

<400> 105596

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105597
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19700

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagcgc 420

uucaacuggu ccggcgucac ccagaacggc accuccuccg ccugcaugcg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105598
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19702

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcgg caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105599
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19709

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105600
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19719

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cacccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105601
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN19730

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105602
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19736

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105603
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19748

<400> 105603
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105604
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19757

<400> 105604
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105605
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19768

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105606
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19781

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccg ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105607
<211> 1701
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<220>

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<400> 105607

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105608
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19806

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105609
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19808

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105610
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19814

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105611
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19816

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105612
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaagcu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcggcaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105613
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19831

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105614
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19849

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcgacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105615
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19865

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19875

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105617
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19895

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggucau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105618
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19905

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105619
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19915

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccucc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uccgaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105620
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19922

<400> 105620
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccgc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccag gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105621
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN19931

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105622
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN19941

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105623
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19951

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105624
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19966

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105625
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN19972

<400> 105625

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acaacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 105626
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19978

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105627
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN19983

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105628
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN19993

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105629
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN20000

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105630
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20006

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105631
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20012

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105632
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20018

<400> 105632

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105633
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20019

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105634
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20021

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105635
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN20034

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105636
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20040

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105637
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN20046

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105638
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20052

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105639
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN20061

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105640
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN20076

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgacu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105641
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN20081

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucau cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggccgcugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggucau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105642
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN20092

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105643
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFN20099

<400> 105643

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccaca accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aacggcaacu ccuaccccaa gcucaacacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

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<210> 105649
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hemagglutinin__InfluenzaA__AFN87930

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<210> 105651
<211> 1701
<212> RNA
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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105652
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105656
<211> 1701
<212> RNA
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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105657
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 105658
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hemagglutinin__InfluenzaA__AFN87943

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105660
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hemagglutinin__InfluenzaA__AFN87945

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105661
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105662
<211> 1701
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hemagglutinin__InfluenzaA__AFN87949

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105663
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN87951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105664
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFN87953

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gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg accucaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105665
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hemagglutinin__InfluenzaA__AFN87955

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105666
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFN87957

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac aagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105667
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFN87959

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105668
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFN87961

<400> 105668

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105669
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgucaaca acaagggcaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

auccgcgacc agcgcgccau cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 105670
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFO64813

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg ccgcuccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacauccgcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFO64824

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cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaaggg ccgcuccucc 480

uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105672
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFO64835

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 105673
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFO64846

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

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cagugccgca ucugcaucug a 1701

<210> 105674
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFO64857

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ccgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa cauccccucc 1020

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gagcuccucg uccuccucga gaacggccgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gaaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc ugcuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacauccgcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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uccuacguca acaacaagaa gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<211> 1698
<212> RNA
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<400> 105679

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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cacuacuccc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ccgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aaccccaaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuacaaga accuccucug gcucaccggc aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaugggcg accagcgcgc caucuaccac aaggagaacg ccuacgucuc cguccucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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uacgucaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__AFO66191

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hemagglutinin__InfluenzaA__AFO66202

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hemagglutinin__InfluenzaA__AFO66213

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<212> RNA

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hemagglutinin__InfluenzaA__AFO66224

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105699
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR68163

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgc caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105700
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR68173

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca guccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105701
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84675

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105702
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84685

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105703
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84694

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

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<210> 105704
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84704

<400> 105704

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105705
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84714

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105706
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFR84724

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84734

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105708
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84754

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105709
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84774

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105711
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84784

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucgcccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105712
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84794

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105713
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84804

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105714
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFR84814

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105715
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<212> RNA
<213> Artificial Sequence

<220>

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<400> 105715

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105716
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFR84834

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84844

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc uccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84854

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84864

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84874

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFR84893

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105722
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFR84903

<400> 105722

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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hemagglutinin__InfluenzaA__AFR84913

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105724
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105725
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53205

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcucccuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccgucc gccacuucga gaagguccgc auccucccca aggaccgcug gacccagcac 420

accaccaccg gcgacuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccgac uaccccgucg ccaagggcuc cuacaacaac 540

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cagcgcgagc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca uccccgagau cgccgcccgc cccgagguca acggccuccg cucccgcaug 720

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgag 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaucaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105726
<211> 1689
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53216

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gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcaucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105727
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53227

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

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cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

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cagaucgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

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aucaugaucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcguc 1680

ugcaucuga 1689

<210> 105728
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53238

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gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccau ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucuac 660

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105729
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53249

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ggcuaccacg ccaacaacuc caccgagacc gucgacacca uccucgagcg caacgucacc 120

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gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcucccuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaagguccgc auccucccca aggaccgcug gaccaaccac 420

accaccaccg gcggcuccaa ggccugcgcc gucuccggcg agcccuccuu cuuccgcaac 480

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cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucuac 660

aagcgcucca uccccgagau cgccgcccgc cccaagguca acggccucgg cucccgcaug 720

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gccgcuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgag 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucauggucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105730
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53260

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca aggccccccu ccagcucggc aacugcaaca ucgccggcug gguccucggc 240

aaccccgagu gcgaguccccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaaccaca ccacccgcgg cgucaccgcc gccugccccc acgccaugaa guccuccuuc 480

uacaagaacc ucgucuggcu caccgaggcc aacggcuccu accccaaccu cucccgcucc 540

uacgucaaca accaggagaa ggagguccuc guccucuggg gcguccacca ccccuccaac 600

aucgaggacc agcgcacccu cuaccgcaag gacaacgccu acgucuccgu cgucuccucc 660

aacuacaacc gccgcuucac ccccgagauc gccaagcgcc ccaagguccg cggccagucc 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

auggacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaagaa ccagcuccgc aacaacgcca aggagcucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 105731
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53271

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gcuuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

accaccaccg gcggcuccau ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccgagaa gggccagaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaaca ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacaacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105732
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53282

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcaccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgagaccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca cccccgagau cgccacccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aagcucgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgu caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105733
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>

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<400> 105733

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaagaacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

accaccaacg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagga ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccaagguca acggccucgg cucccgcaug 720

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cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg cgucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcauggac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105734
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFV53304

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagca gaacgucacc 120

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ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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aagcgcucca cccccaacau cgccacccgc cccaagguca acggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacaugugg gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105735
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFV53314

<400> 105735
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ggcuaccacg ccaacaacuc caccgagacc gucgacacca uccucgagcg caacgucacc 120

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ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcaacggcc ucugcuaccc cggcaacuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcuccca ggccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

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aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

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aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105736
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFV53325

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

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gagugcgacc gccuccucuc cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uacaccgucg ccaagggcuc cuacaacaac 540

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

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acccagaagg ccuucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 105737
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFV53336

<400> 105737
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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccuccg cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcaccucga gaaggucaag auccucccca aggacggcug gacccagcac 420

gagaccgacg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagcgcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcgccc ucuaccagaa ggucggcacc uacgucuccg ccuccaccuc cacccucaac 660

aagcgcucca cccccgagau cgccgcccgc cccgaggucu ccggccucgg cucccgcaug 720

gaguucuccu ggacccuccu cgacgucugg gacaccaucu ccuucgaguc caccggcaac 780

cucgucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucggcaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

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cucauggaga acgagcgcau ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

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<210> 105738
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<220>
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hemagglutinin__InfluenzaA__AFV68720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccgac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105739
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105740
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<212> RNA
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hemagglutinin__InfluenzaA__AFX96359

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

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<210> 105741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96366

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgaccgcgg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96398

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105744
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96408

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96418

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96428

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96438

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105748
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AFX96448

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96458

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AFX96478

<400> 105751

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96488

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105753
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<212> RNA
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hemagglutinin__InfluenzaA__AFX96498

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105754
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105755
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105756
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105758
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 105760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96568

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96578

<400> 105761
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105762
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96588

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96598

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96608

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccacccu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96618

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96628

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96638

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucgucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucauggu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96648

<400> 105768
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105770
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105771
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105772
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFX96688

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgacu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105773
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AFX96698

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 105774
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFX96718

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105775
<211> 1701
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hemagglutinin__InfluenzaA__AFX96728

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 105776
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96738

<400> 105776

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacca cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96748

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96758

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96768

<400> 105779
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aucuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105780
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96778

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96798

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AFX96808

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105784
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96818

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96828

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96838

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105787
<211> 1701
<212> RNA
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<220>

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<400> 105787

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugca cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96904

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96914

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105790
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 105791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AFX96934

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105792
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AFY24097

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105793
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105794
<211> 1701
<212> RNA
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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 105795
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 105796
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB08294

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucguca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc cccgcuacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105797
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB08295

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaagcg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105798
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB08296

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105799
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB08297

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcac cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105800
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<212> RNA
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuacccccg ccucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcac cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AGB08301

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105802
<211> 1701
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uccuccucca ccggccgcau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgacaacuuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105803
<211> 1701
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acccucaucg acgcccuccu cggcgacccc cacugcgacg ucuuccagga cgagaccugg 300

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucgaguccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagcg cggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105804
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105805
<211> 1701
<212> RNA
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<220>

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<400> 105805

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105806
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGB13016

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105807
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGB13026

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105808
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13036

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105809
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<212> RNA
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hemagglutinin__InfluenzaA__AGB13048

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105810
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hemagglutinin__InfluenzaA__AGB13066

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105811
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105812
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 105813
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13125

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105814
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13130

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105815
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13140

<400> 105815
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc ucccucuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105816
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13159

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccucccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105817
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13170

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105818
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13180

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105819
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13190

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105820
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13200

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13210

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13220

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aucuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105823
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<220>

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<400> 105823

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105824
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13250

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105826
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cuccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccaucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105827
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13270

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 105828
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13280

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

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<210> 105829
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13290

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gucaccguca cccacuccgu caaccuccuc gaggucaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105830
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13300

<400> 105830

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105831
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13310

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105832
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13320

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgcccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105833
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13330

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacucca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105834
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13340

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105835
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gagaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105837
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa ccccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105838
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13390

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105839
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hemagglutinin__InfluenzaA__AGB13400

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105840
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGB13410

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105841
<211> 1701
<212> RNA
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<220>

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<400> 105841

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13430

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13440

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13450

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 105845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13460

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 105846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105848
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13490

<400> 105848

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105849
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13500

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc aacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105850
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13520

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaacaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105851
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13530

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau caacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105852
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13540

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 105853
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB13550

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__AGB13560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105858
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105859
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 105860
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 105861
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13630

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13640

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105863
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGB13650

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccuca uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccuca ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13660

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13721

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB13731

<400> 105866

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGB51356

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu ccucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucgag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

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cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB97269

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aucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB97273

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 105870
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 105871
<211> 1701
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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgagaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 105874
<211> 1701
<212> RNA
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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 105875
<211> 1701
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hemagglutinin__InfluenzaA__AGE89287

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<210> 105876
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<210> 105877
<211> 1701
<212> RNA
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<400> 105877

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc ccgcgccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105882
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 105883
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGE89371

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<211> 1701
<212> RNA
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<400> 105884

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 105885
<211> 1701
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 105893
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgagcagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 105916
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 105918
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 105920
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA

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<220>
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cgcauccagg acaucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 105940
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaacaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG13783

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ugggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105942
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG13795

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca guccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG13819

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccgac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG13831

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccgac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGG13855

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 105947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGG13867

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcaagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 105948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGG13879

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<211> 1701
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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 105957
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGG14009

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105958
<211> 1701
<212> RNA
<213> Artificial Sequence

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105959
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGG14033

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca guccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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<210> 105960
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGG14318

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ggcaacgacg acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG14330

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 105962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGG84179

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 105963
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGI02564

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccggc 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 105964
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGI02565

<400> 105964
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccauc 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccaac 420

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<210> 105965
<211> 1704
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGI02566

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 105966
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGI02567

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<210> 105967
<211> 1704
<212> RNA
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<220>

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<400> 105967

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagaa ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

accgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucggc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca aggagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccauggg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 105968
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGI60301

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 105969
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ72861

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ggcggcgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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uga 1683

<210> 105970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73327

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accaccaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca uccccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 105971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73329

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73331

<400> 105972
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caaggucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73333

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73335

<400> 105974

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccc gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73337

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105976
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73339

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73341

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105978
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73343

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gucaccguca cccacuccgu caaccuccuc gaggacaagc agaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGJ73345

<400> 105979
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgaggacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcaacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73347

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73349

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73351

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaagau gcgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73353

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag uccauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73355

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccacc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGJ73357

<400> 105985

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105986
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73361

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccucc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucuuca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 105987
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGJ73363

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AGJ73365

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggc ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucgcc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccag gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105990
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgccgaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 105992
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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<210> 105993
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 105994
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73377

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 105995
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGJ73380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacu ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 105996
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGK62991

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 105998
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 106000
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hemagglutinin__InfluenzaA__AGK62999

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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hemagglutinin__InfluenzaA__AGK63001

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106002
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGK63003

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106003
<211> 1701
<212> RNA
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<400> 106003

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106019
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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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gaccucaucg ucgagcgcuc caaggcccac uccuacugcu accccuacga cgucccgac 360

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccgccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106024
<211> 1683
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hemagglutinin__InfluenzaA__AGK82158

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<212> RNA
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<212> RNA
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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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caguucgagc ucaucgacaa cgaguucaac gaggucgaga agcagaucgg caacgucauc 1260

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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gucaccguca cccgcuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucgag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcagcg ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106035
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hemagglutinin__InfluenzaA__AGL09739

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106036
<211> 1701
<212> RNA
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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106037
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106038
<211> 1701
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcucc gcuccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106039
<211> 1701
<212> RNA
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106040
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106041
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106042
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGL09747

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106043
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGL09748

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106044
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09749

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccgucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09750

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106046
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 106046

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09753

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09754

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106049
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09756

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106050
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09758

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gaucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac caccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 106051
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hemagglutinin__InfluenzaA__AGL09760

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<210> 106052
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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<210> 106053
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hemagglutinin__InfluenzaA__AGL09762

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106055
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 106056
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hemagglutinin__InfluenzaA__AGL09765

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106057
<211> 1701
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<220>

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<210> 106058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09767

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09769

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09770

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09771

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacaucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09772

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09773

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccgaggucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09774

<400> 106064

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09775

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09776

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacaucccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09777

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106068
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09778

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106070
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09780

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucga caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucucccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09781

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09782

<400> 106072
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09783

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gucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106074
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09785

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGL09786

<400> 106075

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaag 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106076
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09787

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09788

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09789

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09790

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09791

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09792

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09794

<400> 106082

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09795

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106084
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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<210> 106085
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09798

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106086
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106087
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09800

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09801

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09802

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09803

<400> 106090
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gcgcacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106091
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09804

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga ccgccccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106092
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09805

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106093
<211> 1701
<212> RNA
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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106094
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106095
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGL09808

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 106097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09810

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106098
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hemagglutinin__InfluenzaA__AGL09811

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106099
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106100
<211> 1701
<212> RNA
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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106101
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 106102
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106103
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGL09816

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106104
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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<210> 106105
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09818

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106106
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGL09819

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106107
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09820

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106108
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGL09821

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106109
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09822

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106110
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09823

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106111
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGL09824

<400> 106111

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 106112
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09825

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106113
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09826

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 106114
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGL09827

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106115
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL09828

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106116
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09829

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106117
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 106118

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 106119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09832

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09833

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGL09881

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106122
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL09882

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106123
<211> 1701
<212> RNA
<213> Artificial Sequence

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106124
<211> 1701
<212> RNA
<213> Artificial Sequence

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106125
<211> 1683
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGL44438

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uga 1683

<210> 106126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGN69267

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 106127
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGN69278

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg agcccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 106128
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGN69302

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cucaacggca agauccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccaagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccaagg acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg acaccacccg cggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

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uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccacccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

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gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaagaaggg cuccuccucc 840

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uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106129
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 106129

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugcucc 180

cucaacggca agauccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccaagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccaagg acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg acaccacccg cggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccacccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

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gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaagaaggg cuccuccucc 840

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gagcuccuca uccuccucga gaacgagcgc acccucgacu uccacgaccu caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc cgcaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cucaacggca agauccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccaagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccaagg acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg acaccacccg cggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccacccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

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gccggccgca ugaacuacua cuggacccuc cucgaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaagaaggg cuccuccucc 840

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uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaugggcau ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cucaacggca agauccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccaagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

aacuccaaga acggcgccug cuaccccggc gaguucgccg acuacgagga gcucaaggag 360

cagcucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg acaccacccg cggcaccacc gucgccugcu cccacuccgg cgccaacucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacacca acaacaaggg caaggagguc cucgucaucu ggggcgucca ccaccccccc 600

accgacuccg accagcagac ccucuaccag aacaaccaca ccuacgucuc cgucggcucc 660

uccaaguacu acaagcgcuu cacccccgag aucgucgccc gccccaaggu ccgcgagcag 720

gccggccgca ugaacuacua cuggacccuc cuccaccagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccuggcac gccuucgccc ucaacgaggg cuccuccucc 840

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ggcgcccuca agggcaaccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccgag cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucaccuc cuucgagcgc uucgagaucu uccccaagga gaccuccugg 420

cccaagcaca acaccaccaa gggcgucacc gccgccugcu cccacgccgg caagugcucc 480

uucuaccgca accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaacaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucaagg accagcagac ccucuaccag aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaaccaca acaucaacau cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaacaag 540

uccuacguca acaagaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgaga accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

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<210> 106135
<211> 1698
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hemagglutinin__InfluenzaA__AGO00301

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<211> 1701
<212> RNA
<213> Artificial Sequence

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<210> 106137
<211> 1704
<212> RNA
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acccucguca agaccaucac caacgaccag aucgagguca ccaacgccac cgagcucguc 180

caguccuccu ccaccggcaa gaucugcaac aacccccacc gcauccucga cggcaucaac 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca ccccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 106153
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGO51374

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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<210> 106154
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGO86686

<400> 106154

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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hemagglutinin__InfluenzaA__AGQ16240

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106156
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGQ16241

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106157
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16242

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 106158
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16243

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 106159
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16245

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 106160
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16247

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106161
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<212> RNA
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hemagglutinin__InfluenzaA__AGQ16248

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106162
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16329

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106163
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16331

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106164
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<212> RNA
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hemagglutinin__InfluenzaA__AGQ16332

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106165
<211> 1701
<212> RNA
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<220>

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106166
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16335

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106167
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ16336

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106168
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ16337

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106169
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hemagglutinin__InfluenzaA__AGQ16338

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<210> 106173
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hemagglutinin__InfluenzaA__AGQ16342

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106174
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106175
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ16344

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106176
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<211> 1698
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aacuccgaga acggcgccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccaca acaccaucaa gggcgucacc gccuccugcu cccaccgcgg ccaguccucc 480

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uccuacguca acaacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

uccuccaacg agcagcaguc ccucuaccgc aacgagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgccc gccccaaggu ccgcgaccag 720

accggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau cauguucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccaugcac gagugcaaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaacaaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgaccu caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccguccg caacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106185
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ47752

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca aggccccccu ccagcucggc aagugcaaca ucgccggcug gguccucggc 240

aaccccgagu gcgagucccu ccucuccaac cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaaccagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg agcagcgcac ccucuaccgc aaggacaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

cccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccccggcucc 840

ggcaucauca ccuccaacgc ccccauggac gagugcgaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccgcauc cucgccaucu acuccaccgu cgccuccucc 1620

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<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcgccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcga cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106187
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccaag cgcuccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acaucaacau cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuacaaga accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaacaag 540

uccuacguca acaagaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg ccucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgaca ccaagugcca gacccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccuucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106188
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ47788

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag aaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

cccaagcaca acgucacccg cggcgucacc gccgccugcu cccacaaggg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucgagg accagaagac ccucuaccgc aaggagaacg ccuacgucuc cgucgucucc 660

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gccggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccuggcac gccuucgccc ucucccgcgg cuucggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 106189
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ47800

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu ccucuccgag cgcuccuggu ccuacaucgu cgagauccccc 300

aacuccgaga acggcaccug cuaccccggc gacuucaccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaagcaca acaccgcccg cggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aaggacggcu ccuaccccaa ccucaagaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

uccaucaagg agcagcagac ccucuaccag aaggagaacg ccuacgucuc cgucgucucc 660

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gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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<210> 106190
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ47811

<400> 106190

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga gcgcuccugg 420

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uucuaccgca accuccucug gcucaccgag aagaacggcu ccuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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<210> 106191
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ47823

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

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<210> 106192
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccucca ccggcaagau cugcaacaac ccccaccgca uccucgacgg caucaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaccugg 300

gaccucuucg ucgagcgcuc caaggccuuc uccaacugcu accccuacua cgucccgac 360

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uccaccaagc gcucccagca gaccaucacc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccucguc 780

aucaacucca acggcaaccu caucgccccc cgcggcuacu ucaagaugcg caccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaccugca ucuccgagug caucaccccc 900

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106193
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacucccu ccuccccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccaaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaagcaca acaccaccaa gggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccaag aaggaggacu ccuaccccaa gcucuccaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacuccaagg agcagcagac ccucuaccag aacgagaacg ccuacgucuc cgucgucucc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

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ggcaucauca ccuccaacgc cuccaugcac gagugcaaca ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccguccg caacggcacc 1500

uacgacuacc ccaaguacuc caaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagc ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106194
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu ccucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaaccgcgg cuccggcucc 840

ggcaucauca ucuccgacgc ccccguccac gacugcaaca ccaagugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu ccucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaaccgcgg cuccggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 106196
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ47894

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106197
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ47906

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ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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<210> 106198
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGQ47918

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uccacccgcc gcucccagca gaccaucauc cccaacaucg gcucccgccc cuggguccgc 720

ggccucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cguccucguc 780

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<210> 106199
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ47930

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacaa gggcgucacc gccgccugcu cccacgccgg caaguccucc 480

uucuaccgca accuccucug gcucaccgag aaggagggcu ccuaccccaa gcucaagaac 540

uccuacguca acaagaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

aacuccaagg accagcagaa ccucuaccag aacgagaacg ccuacgucuc cgucgucacc 660

uccaacuaca accgccgcuu cacccccgag aucgccgagc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc cucaagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccauguac gccuucgccc ucucccgcgg cuucggcucc 840

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ggcgccauca acuccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaaggu cgacggcguc 1560

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<210> 106200
<211> 1698
<212> RNA
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hemagglutinin__InfluenzaA__AGQ47942

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca ccccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccgcaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc ggcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccgaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa gaacuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gaguccuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca ccccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaaggucaa ggaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc ggcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaaggucaa ggaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucaagaucu uccccaagga guccuccugg 420

cccgaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa gaacuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

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<212> RNA
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hemagglutinin__InfluenzaA__AGQ48014

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<210> 106207
<211> 1698
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccggcu gcgacccccu ccuccccguc ggcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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ugccgcaucu gcaucuga 1698

<210> 106208
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ48038

<400> 106208

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccggcu gcgacccccu ccuccccguc ggcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucaagaucu uccccaagga guccuccugg 420

cccgaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa gaacuccuuc 480

uaccgcaacc uccucuggcu caccaagaag gaguccuccu accccgagcu caagaacucc 540

uacgucaaca agaagcgcga ggagguccuc guccucuggg gcauccacca ccccccccaac 600

uccgaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaaggucaa gggccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 106209
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ48050

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugcaag 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccggcu gcgacccccu ccuccccguc ggcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucaagaucu uccccaagga guccuccugg 420

cccgaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa gaacuccuuc 480

uaccgcaacc uccucuggcu caccaagaag gaguccuccu accccgagcu caagaacucc 540

uacgucaaca agaagcgcga ggagguccuc guccucuggg gcauccacca cccccccgac 600

uccgaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaaggucaa gggccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucaaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

gccaucaacu ccucccuccc cuaccagaac auccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 106210
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80946

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ggcuaccacu ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg cccaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucac cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcaacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca cccacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggccccaac uaccccgucg ccaagggcuc cuacaacaac 540

accuccggcg accagaugcu caucaucugg ggcguccacc accccaacga cgaggccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcuccg uccccgagau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggaccauccu cgacguccuc gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cauccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgagc gccucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccaucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc uccaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacgcc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccaac 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 106211
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80947

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ggcuaccacu ccaacaacuc caccgagaag gucgacacca uccucgagcg caacaucacc 120

gucacccacg cccaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcaucccccc cccucgagcu cggcaacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucac cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca cccacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccaucg ccaagggcuc cuacaacaac 540

accuccggcg agcagaugcu caucaucugg ggcguccacc accccaacga cgacgccgag 600

cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

aagcgcucca uccccgagau cgccacccgc cccaagguca acggccaggg cggccgcaug 720

gaguucuccu ggaccauccu cgacaugcuc gacaccauca acuucgaguc caccggcaac 780

cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cauccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgagc gccucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

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acccagaagg ccaucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcucaa ggacaacgcc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccaac 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcgucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 106212
<211> 1689
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80948

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gucacccacg cccaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcaacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucac cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcaacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca cccacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuucggca accccuccuu cuuccgcaac 480

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cagcgcaccc ucuaccagaa cgucggcacc uacgucuccg ucggcaccuc cacccucaac 660

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

accgagggca cccucgagaa cugcgagacc aagugccaga ccccccucgg cgccaucaac 900

accacccucc ccuuccacaa cauccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgagc gccucguccu cgccaccggc cuccgcaacg ucccccagau cgagucccgc 1020

ggccucuucg gcgccaucgc cggcuucauc gagggcggcu ggcagggcau ggucgacggc 1080

ugguacggcu accaccacuc caacgaccag ggcuccggcu acgccgccga caaggagucc 1140

acccagaagg ccaucgacgg caucaccaac aaggucaacu ccgucaucga gaagaugaac 1200

acccaguucg aggccgucgg caaggaguuc aacaaccucg agaagcgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagauccgca ugcagcucaa ggacaacgcc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccaac 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaucg ccggcaucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 106213
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80949

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ggcuaccacu ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

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gagugcgacc gccuccucac cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcaacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca cccacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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accacccucc ccuuccacaa cauccacccc cucaccaucg gcgagugccc caaguacguc 960

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccaac 1560

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aucaugaucg ccggcaucuc ccucuggaug ugcuccaacg gcucccucca gugccgcauc 1680

ugcaucuga 1689

<210> 106214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ80950

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106215
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80951

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ggcaaccccg ucaucugcau gggccaccac gccgucgcca acggcaccau ggucaagacc 120

cucaccgacg accaggucga ggucgucacc gcccaggagc ucgucgaguc ccagaaccuc 180

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aaggucaaca acggcgacua cgcccgccuc uacaucuggg gcguccacca ccccuccacc 600

gacaccgagc agaccaaccu cuacaagaac aaccccggcc gcgucaccgu cuccaccaag 660

accucccaga ccuccgucgu ccccaacauc ggcucccgcc ccuggguccg cggccagucc 720

ggccgcaucu ccuucuacug gaccaucguc gagcccggcg accucaucgu cuucaacacc 780

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auccucaaca ccgccacccc caucggcucc ugcgucucca agugccacac cgacaagggc 900

ucccucucca ccaccaagcc cuuccagaac aucucccgcg ucgccaucgg cgacugcccc 960

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aagaccaacg agaaguacca ccagaucgag aaggaguucg agcaggucga gggccgcauc 1260

caggaccucg agaaguacgu cgaggacacc aagaucgacc ucugguccua caacgccgag 1320

cuccucgucg cccucgagaa ccagcacacc aucgacguca ccgacuccga gaugaacaag 1380

cucuucgagc gcguccgccg ccagcuccgc gagaacgccg aggacaaggg caacggcugc 1440

uucgagaucu uccacaagug cgacaacaac ugcaucgagu ccauccgcaa cggcaccuac 1500

gaccacgacg ucuaccgcaa cgaggccauc aacaaccgcu uccagaucca gggcgucaag 1560

cucacccagg gcuacaagga caucauccuc uggaucuccu ucuccaucuc cugcuuccuc 1620

cucgucgccc uccuccucgc cuucauccuc ugggccugcc agaacggcaa cauccgcugc 1680

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<210> 106216
<211> 1683
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hemagglutinin__InfluenzaA__AGQ80953

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

gaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106217
<211> 1683
<212> RNA
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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

gagucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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guccgccgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106218
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<212> RNA
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hemagglutinin__InfluenzaA__AGQ80955

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106219
<211> 1683
<212> RNA
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<400> 106219

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uccaagggca agcgcgccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 106220
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80957

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ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uga 1683

<210> 106221
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<212> RNA
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accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

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uga 1683

<210> 106222
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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uga 1683

<210> 106223
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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aacuggaccc gcgacuccau gaccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc aagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106224
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<212> RNA
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hemagglutinin__InfluenzaA__AGQ80962

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacgcc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc aagaucgacc ccgucaagcu cuccuccggc 1560

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uga 1683

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<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106226
<211> 1683
<212> RNA
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<220>
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<400> 106226

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uccaagggca agcgcgccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

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<211> 1683
<212> RNA
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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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guccgccgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106228
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80968

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uccaagggca agcgcgccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106229
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<212> RNA
<213> Artificial Sequence

<220>
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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 106230
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ80971

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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 106231
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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caggucgacg ccaacugcga gggcgacugc uaccacaacg gcggcaccau caucuccaac 900

cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

gaguccccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucgu cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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guccgccgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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hemagglutinin__InfluenzaA__AGQ80977

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc guccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uga 1683

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<212> RNA
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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccau caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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guccgccgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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<212> RNA
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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

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accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uga 1683

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<212> RNA
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<220>
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uccaagggca agcgcgccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uga 1683

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<400> 106237

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

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uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uga 1683

<210> 106238
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<212> RNA
<213> Artificial Sequence

<220>
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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 106239
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<212> RNA
<213> Artificial Sequence

<220>
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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

gaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106256
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGQ81004

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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uga 1683

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<212> RNA
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hemagglutinin__InfluenzaA__AGQ81005

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cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccagacca ccaaguccua caagaacacc 540

cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uga 1683

<210> 106258
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<212> RNA
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<220>
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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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guccgccgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106260
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81008

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cgcaaggacc ccgcccucau caucuggggc auccaccacu ccggcuccac caccgagcag 600

accaagcucu acggcuccgg caacaagcuc aucaccgucg gcuccuccaa cuaccagcag 660

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uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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uga 1683

<210> 106261
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81009

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uga 1683

<210> 106262
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81011

<400> 106262

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accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgccggcccc aaggucaacg gccaguccgg ccgcaucgac 720

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uga 1683

<210> 106263
<211> 1683
<212> RNA
<213> Artificial Sequence

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

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cgcgaguccg gcggcaucaa caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106264
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81017

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106265
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucgu caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgccaucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106266
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucgu caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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uccuucgucc ccuccccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106267
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81020

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106268
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81021

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucgu caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106269
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81022

<400> 106269
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

<210> 106270
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81023

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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uga 1683

<210> 106271
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81025

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106272
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81026

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cuccucucca acaccgacaa cgccgccuuc ccccccacca ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

<220>

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<400> 106273

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccacca ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106275
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

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accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106276
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucaa caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106277
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106278
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81033

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caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106279
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81034

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uga 1683

<210> 106280
<211> 1683
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hemagglutinin__InfluenzaA__AGQ81035

<400> 106280

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uga 1683

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<212> RNA
<213> Artificial Sequence

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uga 1683

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<212> RNA
<213> Artificial Sequence

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uga 1683

<210> 106283
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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uga 1683

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<212> RNA

<213> Artificial Sequence

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uga 1683

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<212> RNA
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uga 1683

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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81041

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uga 1683

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<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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<211> 1683
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

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<212> RNA
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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

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<212> RNA
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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

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<212> RNA
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<400> 106291

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81047

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

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uga 1683

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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGQ81049

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uga 1683

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<212> RNA
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uga 1683

<210> 106295
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81051

<400> 106295
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucaa caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

caguucgagc ucaucgacaa cgaguucacc gaggucgaga agcagaucgg caacgucauc 1260

aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106296
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81052

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

caguucgagc ucaucgacaa cgaguucacc gaggucgaga agcagaucgg caacgucauc 1260

aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106297
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81053

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucaa caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagaug gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

caguucgagc ucaucgacaa cgaguucacc gaggucgaga agcagaucgg caacgucauc 1260

aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcaagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106298
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81055

<400> 106298

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aucugccucg gccaccacgc cgucuccaac ggcaccaagg ucaacacccu caccgagcgc 120

ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

caguucgagc ucaucgacaa cgaguucacc gaggucgaga agcagaucgg caacgucauc 1260

aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106299
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81056

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106300
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81057

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aucugccucg gccaccacgc cgucuccaac ggcaccaagg ucaacacccu caccgagcgc 120

ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106301
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81058

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106302
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81059

<400> 106302
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106303
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81060

<400> 106303
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aucugccucg gccaccacgc cgucuccaac ggcaccaagg ucaacacccu caccgagcgc 120

ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106304
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81061

<400> 106304
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

caguucgagc ucaucgacaa cgaguucaac gaggucgaga agcagaucgg caacgucauc 1260

aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106305
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgacau ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc guccaggacg cccaguacac caacaaccgc 540

ggccgcaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

uacugggccg uccuccgccc cggccagacc cuccgcaucc gcuccaacgg caaccucauc 780

gccccuggu acggccacau ccucuccggc gaguccccacg gccgcauccu caagaccgac 840

cucaacuccg gcaacugcgu cguccagugc cagaccgagc gcggcggccu caacaccacc 900

cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106306
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81086

<400> 106306
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc guccaggacg cccaguacac caacaaccgc 540

ggccgcaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

uacugggccg uccuccgccc cggccagacc cuccgcaucc gcuccaacgg caaccucauc 780

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cucaacuccg gcaacugcgu cguccagugc cagaccgagc gcggcggccu caacaccacc 900

cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106307
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81087

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccgc 540

gagaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua cgucggcguc 960

aagucccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

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ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaugac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucaaccacga guucuccgag aucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgccgcuac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106308
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81092

<400> 106308
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acaccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc guccaggacg cccaguacac caacaaccgc 540

ggccgcaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

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uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106309
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGQ81095

<400> 106309

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aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc guccaggacg cccaguacac caacaaccgc 540

ggccgcaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgccgcaa caucugcauc 1680

uga 1683

<210> 106310
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81099

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc acccaggacg cccaguacac caacaaccgc 540

gagaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaaggucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgccgcaa caucugcauc 1680

uga 1683

<210> 106311
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81100

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccgc 540

gagaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcaucc gcuccaacgg caaccucauc 780

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cucaagcgcg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgccgcuac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgccgcaa caucugcauc 1680

uga 1683

<210> 106312
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81123

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucaacacccu caccgaggac 120

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc guccaggacg cccaguacac caacaacaag 540

ggccgcaaca uccucuucau gugggggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cucaacuccg gcgacugcgu cguccagugc caguccgagc gcggcggccu caacaccacc 900

cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccccg cccgcuccac ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacgaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106313
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu cccccucgag ggccgcgagu gguccuacau cgucgagcgc 300

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ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg caacaugcgc 480

uggcucaccc agaaggacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacgac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

cagaaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106314
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaggacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106315
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81126

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 106316
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81127

<400> 106316

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

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uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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uga 1683

<210> 106317
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81128

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ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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uga 1683

<210> 106318
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81130

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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccag 540

gagaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cguccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuucaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106319
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hemagglutinin__InfluenzaA__AGQ81132

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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucgag ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggcac cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

acccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucaccu acaccggcac cucccgcucc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaguccgg cuucuacccc guccaggacg ccaaguacac caacaaccgc 540

ggcaagaaca uccucuucgu cuggggcauc caccaccccc acaccuacac cgaccagacc 600

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cuccccuucc acaacaucuc caaguacgcc uucggcaccu gccccaagua cgucaagguc 960

aacucccuca agcucgccau cggccuccgc aacgucccg cccgcuccaa ccgcggccuc 1020

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ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

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cgcgaggagu cccgccucga gcagcagcgc aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

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hemagglutinin__InfluenzaA__AGQ81133

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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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cccuccgccg ucaacggcac cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

acccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucaccu acaccggcac cucccgcucc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaguccgg cuucuacccc guccaggacg ccaaguacac caacaaccgc 540

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cuccccuucc acaacaucuc caaguacgcc uucggcaccu gccccaagua cgucaagguc 960

aacucccuca agcucgccau cggccuccgc aacgucccg cccgcuccaa ccgcggccuc 1020

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

cgcgaggagu cccgccucga gcagcagcgc aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 106321
<211> 1683
<212> RNA
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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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cccuccgccg ccaacggcac cugcuacccc ggcaacgucg agaaccccga ggagcuccgc 360

acccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucaccu acaccggcac cucccgcucc ugcuccggcu ccuucuaccg cuccaugcgc 480

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aacucccuca agcucgccau cggccuccgc aacgucccg cccgcuccaa ccgcggccuc 1020

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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cgcgaggagu cccgccucga gcagcagcgc aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 106322
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<212> RNA
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cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacaa cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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<212> RNA
<213> Artificial Sequence

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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uga 1683

<210> 106325
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<212> RNA
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hemagglutinin__InfluenzaA__AGQ81138

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uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacgac 1260

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uga 1683

<210> 106326
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81139

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uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacaa cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccgacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

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uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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uacgagauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacgac 1260

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uga 1683

<210> 106330
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ucccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga cuccaucugg 420

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aaccucuaca cccgcaccga caccaagacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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<212> RNA
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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

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uga 1683

<210> 106332
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<212> RNA
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uga 1683

<210> 106333
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<212> RNA
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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

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uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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gccccuggu acggccacau ccuccucggc gagucccacg gccgcauccu caagaccgac 840

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

aagucccuca agcucgccgu cggccuccgc aacgucccg cccgcuccuc ccgcggccuc 1020

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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uacgacauca ucgaccacga guucuccgag aucgagaccc gccucaacau gaucaacgac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106335
<211> 1683
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81152

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gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu cccccucgag ggccgcgacu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag aagauccaga ucuuccccga cuccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cguccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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ggcuuccagc acuccaacga ccagggcacc ggcauggccg ccgaccgcga cuccacccag 1140

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uga 1683

<210> 106336
<211> 1683
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81153

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gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu cccccucgag ggccgcgacu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag aagauccaga ucuuccccga cuccaucugg 420

aacgucuccu acggcggcau cuccaaggcc ugcuccaacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccaacac cacccagacc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau ccaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

uacugggccg uccucaagcc cggccagacc cuccgcgucc gcuccaacgg caaccucauc 780

gcccccuggu acggccacau ccuccucggc aagucccacg gccgcauccu caagaccgac 840

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cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

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uga 1683

<210> 106337
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<212> RNA
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cccuccgccg ucaacggcgu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgccuc cuccuaccag aagauccaga ucuuccccga cuccaucugg 420

aacgucuccu acaacggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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uga 1683

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<211> 1683
<212> RNA

<213> Artificial Sequence

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aacgucuccu acggcggcau cuccaaggcc ugcuccaacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

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gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau ccaccgcacc 660

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106339
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGQ81157

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ucccucuucu ccuccgccuc cuccuaccag aagauccaga ucuuccccga cuccaucugg 420

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uggcucaccc agaagaacaa caacuacccc guccaggacg cccaguacac caacaaccgc 540

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106340
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81158

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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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uga 1683

<210> 106341
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81159

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caggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106342
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81161

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uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

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uggcucaccc agaagaacuc cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

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uggcucaccc agaagaacuc cgacuacccc auccaggacg cccaguacac caacaaccag 540

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uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

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uggcucaccc agaagaacuc caacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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uga 1683

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hemagglutinin__InfluenzaA__AGQ81185

<400> 106358
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccuccc ucggccagcc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucgag ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaccugg 420

aacgucuccu acaacggcac cuccaaggcc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacuc caacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccgacgg caaccucauc 780

gcccccuggu acggccacau ccucuccggc gagucccacg gccgcauccu caagaccgac 840

cucaagcgcg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcauc 960

aagucccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106359
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGQ81186

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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gccaccuccc ucggccagcc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucgag ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acgacggcac cuccaaggcc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacuc cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccgacgg caaccucauc 780

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cucaagaagg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcauc 960

aaguccccuca agcucgccau cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccgucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg caagaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106360
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81190

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc ccgcgagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccuccc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaggacaa cgccuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucaacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccaacgg caaccucauc 780

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cucaagcgcg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcaug 960

aaguccccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106361
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81191

<400> 106361
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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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gccaccuccc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaggacaa cgccuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucaacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccaacgg caaccucauc 780

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cucaagcgcg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcaug 960

aagucccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106362
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81192

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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aacgucuccu acaacggcac cuccaaggcc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc gcaagaacgg cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcauc 960

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uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

aaggccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106363
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGQ81193

<400> 106363

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

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aacgucuccu acaccggcac cuccaaggcc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacgg cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106364
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81194

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

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aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaggacaa cgccuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucaacuac 720

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cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcaug 960

aaguccccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

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aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 106365
<211> 1686
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGQ81195

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ugccucggcc accacgccgu cgccaacggc accaucguca agacccucac caacgagcag 120

gaggagguca ccaacgccac cgagaccguc gagggcaagu cccucaaccg ccucugcaug 180

aagggccgca accacaagga ccucggcaac ugccacccca ucggcaugcu caucggcacc 240

cccgccugcg accuccaccu caccggcacc ugggacaccc ucaucgagcg cgagaacgcc 300

aucgccuacu gcuaccccgg cgccaccauc aacgaggagg cccuccgcca gaagaucaug 360

gaguccggcg gcaucuccaa gaucuccacc ggcuucaccu acggcuccuc caucaacucc 420

gccggcacca cccgcgccug caugcgcaac ggcggcaacu ccuucuacgc cgagcucaag 480

uggcucgucu ccaaguccaa gggccagaac uuccccccaga ccaccaacac cuaccgcaac 540

accgacaccu ccgagcaccu caucaugugg ggcauccacc accccuccuc cacccaggag 600

aagaacgacc ucuacggcac ccagucccuc uccaucuccg ucggcuccuc caccuaccag 660

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gacuuccacu ggacccucgu ccagcccggc gacaacauca ccuucuccca caacggcggc 780

cucaucgccc ccucccgcgu cuccaagcuc aucggccgcg gccucggcau ccaguccgac 840

gccuccaucg acaacaacug cgaguccaag ugcuucuggc gcggcggcuc caucaacacc 900

cgccuccccu uccagaaccu cuccccccgc accgucggcc agugccccaa guacgucaac 960

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accgaguucg aguccaucga guccgaguuc uccgagaucg agcaccagau cggcaacguc 1260

aucaacugga ccaaggacuc caucaccgac aucuggaccu accaggccga gcuccucguc 1320

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cgcguccgca agcagcuccg ccagaacgcc gaggaggacg gcaagggcug cuucgagauc 1440

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ggcuacaagg acaucauccu cugguucucc uucggcgccu ccugcuucgu ccuccucgcc 1620

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aagggccgcu cccacaagga ccucggcaac ugccacccca ucggcaugcu caucggcacc 240

cccgccugcg accuccaccu caccggcacc ugggacaccc ucaucgagcg cgagaacgcc 300

aucgccuacu gcuaccccgg cgccaccguc aacgaggagg cccuccgcca gaagaucaug 360

gaguccggcg gcaucuccaa gaucuccacc ggcuucaccu acggcuccuc caucaacucc 420

gccggcacca ccaaggccug caugcgcaac cgcggcaacu ccuucuacgc cgagcucaag 480

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cccgccugcg accuccaccu caccggcacc ugggacaccc ucaucgagcg cgagaacgcc 300

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gaguccggcg gcaucuccaa gaucuccacc ggcuucaccu acggcuccuc caucaacucc 420

gccggcaaca ccaaggccug caugcgcaac ggcggcaacu ccuucuacgc cgagcuccgc 480

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cucaucgccc ccucccgcgu cuccaagcuc aucggccgcg gccucggcau ccaguccgac 840

gcccccaucg acaacaacug cgaguccaag ugcuucuggc gcggcggcuc caucaacacc 900

cgccuccccu uccagaaccu cuccccccgc accgucggcc agugccccaa guacgucaac 960

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gaguccggcg gcaucuccaa gaucuccacc ggcuucaccu acggcuccuc caucaacucc 420

gccggcacca ccaaggccug caugcgcaac ggcggcaacu ccuucuacgc cgagcucaag 480

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cccaugugcg acgaccucau cggcaagacc uccugguccu acaucgucga gaagcccaac 300

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gucaacuccg gcgccggcgu caccgccgcc ugcaaguucg gcuccuccaa cuccuucuuc 480

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<212> RNA
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<400> 106370

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cccaugugcg acgaccucau cggcaagacc uccugguccu acaucgucga gaagcccaac 300

cccgccaacg gcaucugcua ccccggcacc cucgagaacg aggaggagcu ccgccucaag 360

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gucaacuccg gcgccggcgu caccgccgcc ugcaaguucg gcuccuccaa cuccuucuuc 480

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cccaugugcg acgaccucau cggcaagacc uccugguccu acaucgucga gaagcccaac 300

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<213> Artificial Sequence

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<212> RNA
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gucaacuccg gcgccggcgu caccgccgcc ugcaaguucg gcuccuccaa cuccuucuuc 480

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uuccgcuccg agcucaacau cgaguccugc uccaccaagu gccagaccga gaucggcggc 900

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augaacacca acuucgaguc cguccagcac gaguucuccg agaucgagga gcgcaucaac 1260

cagcucucca agcacgucga cgacuccguc gucgacaucu gguccuacaa cgcccagcuc 1320

cucguccucc ucgagaacga gaagacccuc gaccuccacg acuccaacgu ccgcaaccuc 1380

cacgagaagg uccgccgcau gcucaaggac aacgccaagg acgagggcaa cggcugcuuc 1440

accuucuacc acaagugcga caacgagugc aucgagcgcg uccgcaacgg caccuacgac 1500

cacaaggagu ucgaggagga guccaagauc aaccgccagg agaucgaggg cgucaagcuc 1560

gacuccuccg gcaacgucua caagauccuc uccaucuacu ccugcaucgc cuccucccuc 1620

auccucgccg cccucaucau gggcuucauc cucugggccu gcuccaacgg cuccugccgc 1680

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cuggaccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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cgcaaccucu acgacaaggu ccgccuccag cucaaggaca acgccaagga gcucggcaac 1440

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgucc ucgccaucau gauggccggc cucucccucu ggaugugcuc caacggcucc 1680

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

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aacggcguca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106384
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<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccggcuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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auggagaacc agcacaccau cgaccucgcc gacuccgaga ugaacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccuccauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccccauga ccaaguccua caagaacacc 540

cgcaaggccc ccgcccucau caucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucc gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgccggcccc caggucaacg gccaguccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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caguccgcca ucaaccagau gaccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gccaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 106386
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<212> RNA
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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucaa caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

aaguccccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106387
<211> 1683
<212> RNA
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cuccccuucc agaacaucga cucccgcguc gucggcaagu gcccccgcua cgucaagcag 960

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 106388
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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<400> 106388

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

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caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 106389
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR33899

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uggcucaccc agaagaacuc caacuacccc auccaggacg cccaguacac caacaaccag 540

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accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

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gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106398
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hemagglutinin__InfluenzaA__AGR49900

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AGR49972

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 106405
<211> 1698
<212> RNA
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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

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aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 106409
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106410
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 106412
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGR50063

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106413
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50074

<400> 106413
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcaaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50085

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106415
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50096

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106416
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50107

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106417
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGR50118

<400> 106417

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50129

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggccagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106419
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50140

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106420
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50151

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106421
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50162

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaacaagg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 106422
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50174

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106423
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50185

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50196

<400> 106424

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 106425
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50207

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106426
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50218

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 106427
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50229

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106428
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50240

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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106429
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50251

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccuca uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50262

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagaag acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50273

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50284

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacuc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50295

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50306

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106435
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGR50317

<400> 106435

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106436
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGR50328

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaagu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50339

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gaccuccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106438
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gaucaugggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106439
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGR50361

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 106440
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGT18718

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106441
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGT18720

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccaac 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagcgccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106442
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGT18721

<400> 106442

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cauccagcgc uccgagaucu gcaccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagaac 600

ucccgcggcc accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu caaggagcag 720

gacggccgca uggacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 106443
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18722

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aaguccaaca accgcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 106444
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGT18723

<400> 106444
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aagaccaaca accgcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccagaac 600

aagaaggccg agcagcagac ccccuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca uggacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106445
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGT18724

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucguccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aagaccaaca accgcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua ccgcacccuc aucgagcccg agaacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106446
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGT18725

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cacccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106447
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18734

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106448
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18735

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106449
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18748

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacga ggagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106450
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGT18749

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aucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106451
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18751

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaag 1320

uccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106452
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AGT18752

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggccgc 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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uccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106453
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggccgc 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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uccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106454
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18754

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aucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcgg caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccacc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggccgc 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106455
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18756

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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uccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106456
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18757

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106457
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18758

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106458
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18759

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106459
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18760

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaag 1320

uccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccucgucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106460
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGT18761

<400> 106460

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugccgccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacucc 1320

uccgaguucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccucgucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106461
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGT37102

<400> 106461
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ugcgucggcu accacgccaa caacuccacc gacaccgucg acaccaucau ggagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugcucc 180

cucaacggca aggccccccu ccagcucggc aacugcaacg ucgccggcug gauccucggc 240

aaccccgagu gcgaccuccu ccucaccgcc aacuccuggu ccuacaucau cgagaccucc 300

uccuccaaga acggcaccug cuaccccggc gaguucuccg acuacgagga gcuccgcgag 360

cuccucucca ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caccuccugg 420

cccaaccacg agaccaccaa gggcgccacc aucgccugcu cccacuccgg cgccuccucc 480

uucuaccgca accuccucug gaucgucaag aagggcaacu ccuaccccaa gaucuccaag 540

uccuacacca acaaccgcgg caaggagguc cucgucaucu ggggcgucca ccaccccccc 600

accgacuccu cccagcaggc ccucuaccag aacacccaca ccuacaucuc cgucggcucc 660

uccaaguacu accagcgcuu cacccccguc gucgccgccc gccccaagau ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc cucgagcagg gcgacaccau caccuucgag 780

gccaccggca accucaucgc ccccugguac gccuucgccc ucgacauggg cuccuccucc 840

ggcaucaugg ucuccgacgc ccccguccac aacugcacca ccaagugcca gacccccccac 900

ggcgcccuca aguccaaccu ccccuuccag aacguccacc ccaucaccau cggcgagugc 960

cccaaguacg ucaaguccac ccagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagau cgccaucgac ggcaucucca acaaggucaa cuccaucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuu caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc cgcaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg agaacgucaa gaacggcacc 1500

uacaacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaucggcgu ccaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106462
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01877

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01878

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106464
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01879

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106465
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU01881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106466
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01883

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acaacaagga gaaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01884

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01885

<400> 106468
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01887

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccg ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106470
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01888

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccgcuu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGU01889

<400> 106471

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU01890

<400> 106472
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92645

<400> 106473
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgagaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106474
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92667

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc gcccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106475
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92678

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106476
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92711

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag cagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106477
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92722

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106478
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92733

<400> 106478

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106479
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92744

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcgcc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106480
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92755

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaaggaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106481
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92766

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 106482
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92777

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106483
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92788

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augcucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106484
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92799

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 106485
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92821

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagauguu caagcccgag aucgccaccc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 106486
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGU92843

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106487
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92854

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aacgucaaga accucuacga gaagguccgc ucccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

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<210> 106488
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92887

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

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<210> 106489
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 106489

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ucccgcuacu ccaagaaguu caagcccgag aucgagaccc gccccaaggu ccgcgaccag 720

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<210> 106490
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU92909

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106491
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92931

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag cagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106492
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92942

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106493
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92953

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106494
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92964

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augcucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106495
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92975

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106496
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92986

<400> 106496

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106497
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU92997

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagauguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106498
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGU93008

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgacg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106499
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU93019

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccucccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca acaccaacgg cgucaccgcc gccugcuccc acgagggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccgagaag gagggcuccu accccaagcu caagaacucc 540

uacgucaaca agaagggcaa ggagguccuc guccucuggg gcauccacca cccccccaac 600

uccaaggagc agcagaaccu cuaccagaac gagaacgccu acgucuccgu cgucaccucc 660

aacuacaacc gccgcuucac ccccgagauc gccgagcgcc ccaagguccg cgaccaggcc 720

ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

aucaucaccu ccaacgccuc caugcacgag ugcaacacca agugccagac cccccucggc 900

gccaucaacu ccucccuccc cuaccagaac auccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacac ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

aucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacac cgucaucgag 1200

aagaugaaca uccaguucac cgccgucggc aaggaguuca acaagcucga gaagcgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uuccucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug cgacaacgag ugcauggagu ccguccgcaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

cucgagucca ugggcaucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 106500
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU93031

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106501
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU93042

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acauccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106502
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGU93053

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGV99014

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106504
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGV99037

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106505
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGV99049

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

gucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacggcaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106506
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGV99073

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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gucgagcuca agcccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106509
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 106512
<211> 1701
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hemagglutinin__InfluenzaA__AGV99157

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<210> 106513
<211> 1701
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hemagglutinin__InfluenzaA__AGV99169

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106514
<211> 1701
<212> RNA
<213> Artificial Sequence

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106515
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGV99193

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106516
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106517
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106518
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW00065

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacaccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106519
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW00077

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 106520
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00089

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00101

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106522
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106523
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106524
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106525
<211> 1701
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<210> 106526
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<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106527
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<212> RNA
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hemagglutinin__InfluenzaA__AGW00173

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106528
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGW00185

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106529
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00709

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106530
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106538
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<212> RNA
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hemagglutinin__InfluenzaA__AGW00817

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106539
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106540
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cggccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106541
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00865

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106543
<211> 1701
<212> RNA
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<220>

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00889

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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<210> 106545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00901

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW00913

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01244

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01256

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01295

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagaucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01307

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106552
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01319

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106553
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01331

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgagc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106554
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01343

<400> 106554
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106555
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106556
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01367

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106557
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01391

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01403

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01415

<400> 106559
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01427

<400> 106560
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGW01439

<400> 106561

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01451

<400> 106562
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucguc gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01463

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01475

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01487

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01499

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01511

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgccgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01535

<400> 106568

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01547

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106570
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW01559

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01571

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106572
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01583

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01595

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01607

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106575
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01619

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01631

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01643

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01655

<400> 106578
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AGW01667

<400> 106579

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacgag 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01679

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01691

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc gucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01701

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01713

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01725

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW01737

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106586
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 106587
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106588
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106589
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106590
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01797

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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cgcugcaaca ucugcaucug a 1701

<210> 106591
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01809

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106592
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01821

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106593
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106594
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW01845

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 106595
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106596
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106597
<211> 1701
<212> RNA
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<220>

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc gucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106598
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW01893

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106599
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AGW01905

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106600
<211> 1701
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hemagglutinin__InfluenzaA__AGW01917

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106601
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106610
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106611
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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cgcugcaaca ucugcaucug a 1701

<210> 106612
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106613
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106614
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW02097

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106615
<211> 1701
<212> RNA
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<220>

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<400> 106615

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<210> 106616
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGW02133

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106617
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hemagglutinin__InfluenzaA__AGW02157

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106618
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AGW02169

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106619
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106620
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AGW02193

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106621
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW04171

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106622
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGW27061

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau cgacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augcgcuccg aggucgagua cggcaacugc uccacccgcu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 106623
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGY14471

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucccccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgacg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucggcaacc agcgcacccu cuaccacacc gagaacaccu acgucuccgu cgucuccucc 660

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 106624
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGY14477

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcggccuccu caucccccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgacg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucggcaacc agcgcacccu cuaccacacc gagaacaccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaugaac 1380

cucuacgaga aggucaaggg ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__AHC57459

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106628
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106629
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106630
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<212> RNA
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hemagglutinin__InfluenzaA__AHC57523

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106631
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106632
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC57827

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106657
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC58432

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106658
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 106658

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106659
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106660
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC58468

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106661
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC58479

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucaa gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106662
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC58491

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106663
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106664
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC58527

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106665
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hemagglutinin__InfluenzaA__AHC58563

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106668
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106669
<211> 1701
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<210> 106670
<211> 1701
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<210> 106671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC58647

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106672
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106704
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hemagglutinin__InfluenzaA__AHC59149

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106705
<211> 1701
<212> RNA
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<400> 106705

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106706
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106707
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC59209

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgccgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106708
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC59221

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106709
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC59245

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 106710
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC59257

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106711
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC59269

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106712
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hemagglutinin__InfluenzaA__AHC59281

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 106714
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106715
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hemagglutinin__InfluenzaA__AHC59329

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106716
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 106717
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC59377

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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC59413

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AHC59425

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106725
<211> 1701
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hemagglutinin__InfluenzaA__AHC59485

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<210> 106726
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106727
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106732
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106734
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<212> RNA

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AHC59617

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106737
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 106738
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106739
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hemagglutinin__InfluenzaA__AHC59653

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106740
<211> 1701
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hemagglutinin__InfluenzaA__AHC59665

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106741
<211> 1701
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<220>

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<400> 106741

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<210> 106742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106743
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106744
<211> 1701
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hemagglutinin__InfluenzaA__AHC59713

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106745
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106746
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106747
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 106748

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106749
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC59785

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106750
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC59797

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106760
<211> 1701
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hemagglutinin__InfluenzaA__AHC59915

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106761
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106762
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acaucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106763
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106764
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC59999

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106765
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC60011

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106766
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHC60023

<400> 106766

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<210> 106767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60035

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60047

<400> 106768
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60059

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106770
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60071

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106771
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHC60083

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60095

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60107

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucaa gaucaagggc 1560

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<210> 106774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60119

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106775
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60131

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106776
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60143

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHC60155

<400> 106777

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccucccccca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60167

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC60179

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60191

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60203

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60215

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106783
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hemagglutinin__InfluenzaA__AHC60239

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 106784

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106786
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106787
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106788
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106790
<211> 1701
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hemagglutinin__InfluenzaA__AHC60323

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106791
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hemagglutinin__InfluenzaA__AHC60335

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106792
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106793
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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<210> 106796
<211> 1701
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hemagglutinin__InfluenzaA__AHC60395

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106797
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106798
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hemagglutinin__InfluenzaA__AHC60419

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__AHC60431

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106808
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106809
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106810
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106811
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106812
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106813
<211> 1701
<212> RNA
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<220>

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<210> 106814
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60623

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106815
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106816
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC60647

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106817
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106818
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106819
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106820
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC60707

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aucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106822
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC60719

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106827
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106830
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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<210> 106831
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106833
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106835
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<210> 106836
<211> 1701
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hemagglutinin__InfluenzaA__AHC60899

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<210> 106837
<211> 1701
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hemagglutinin__InfluenzaA__AHC60911

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106838
<211> 1701
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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106839
<211> 1701
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hemagglutinin__InfluenzaA__AHC60935

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106840
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC60947

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106841
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<212> RNA
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hemagglutinin__InfluenzaA__AHC60959

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 106842
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHC60971

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106843
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC60983

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106844
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61007

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61019

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61031

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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<210> 106847
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<212> RNA
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<210> 106850
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106851
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<212> RNA
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hemagglutinin__InfluenzaA__AHC61103

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<210> 106852
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hemagglutinin__InfluenzaA__AHC61115

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<210> 106853
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106854
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 106855
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106858
<211> 1701
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<211> 1701
<212> RNA
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<210> 106860
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hemagglutinin__InfluenzaA__AHC61211

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<210> 106861
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hemagglutinin__InfluenzaA__AHC61223

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106862
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<220>
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hemagglutinin__InfluenzaA__AHC61235

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61247

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61259

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106865
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61271

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61283

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHC61295

<400> 106867

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61307

<400> 106868
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61319

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61331

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61343

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61355

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106873
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61367

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106874
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61379

<400> 106874

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106875
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61391

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106876
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC61403

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106877
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61415

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caacaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__AHC61523

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106888
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106889
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106890
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hemagglutinin__InfluenzaA__AHC61571

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106891
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC61583

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 106893
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC61607

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106894
<211> 1701
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hemagglutinin__InfluenzaA__AHC61619

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106896
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106898
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hemagglutinin__InfluenzaA__AHC61667

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__AHC61679

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106900
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106901
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC61703

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106902
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hemagglutinin__InfluenzaA__AHC61715

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccgucuc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106903
<211> 1701
<212> RNA
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<220>

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<400> 106903

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106904
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106905
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacgucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106906
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC61763

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61775

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61787

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106909
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC61799

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106914
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106915
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106916
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC61895

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106918
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106920
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 106921
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aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 106922
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hemagglutinin__InfluenzaA__AHC61979

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106923
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106924
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106925
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<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHC62086

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106932
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<210> 106934
<211> 1701
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hemagglutinin__InfluenzaA__AHC62122

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106936
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106937
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106938
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC62170

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<210> 106939
<211> 1701
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<210> 106940
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHC62194

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106941
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHC62206

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaucugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106942
<211> 1701
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hemagglutinin__InfluenzaA__AHC62218

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 106943
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106944
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106945
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106946
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHC62278

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<210> 106947
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHC62290

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106948
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC62302

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHC62314

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106950
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caacggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106951
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106952
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106953
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106954
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 106956
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 106957
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<220>

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<400> 106957

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca uccgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106958
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62422

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62434

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62458

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62470

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62482

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62506

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106965
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hemagglutinin__InfluenzaA__AHC62518

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106966
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106967
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccgucuc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106968
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

auggucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 106970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62578

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 106971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62590

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 106972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHC62602

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62614

<400> 106973
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga ucaucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62626

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106975
<211> 1701
<212> RNA
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<220>

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<400> 106975

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106976
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62662

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccuccugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 106978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHC62674

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 106979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37972

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 106980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37973

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHE37974

<400> 106981
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37975

<400> 106982

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37976

<400> 106983
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccgccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcggcaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37977

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37978

<400> 106985
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106986
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37979

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106987
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37980

<400> 106987
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 106988
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHE37981

<400> 106988
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acauccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 106990
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccgag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 106991
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 106992
<211> 1701
<212> RNA
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 106993
<211> 1701
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<400> 106993

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHE37987

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106995
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHE37988

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 106996
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106997
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHE37990

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 106998
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 106999
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<212> RNA
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<211> 1701
<212> RNA
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<400> 107000

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__AHE38024

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107002
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHE38026

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 107003
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<212> RNA
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hemagglutinin__InfluenzaA__AHE38027

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107004
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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hemagglutinin__InfluenzaA__AHG96276

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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hemagglutinin__InfluenzaA__AHG96312

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucguccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 107024
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHG96313

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 107025
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<212> RNA
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hemagglutinin__InfluenzaA__AHG96314

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 107026
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHG96315

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 107027
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96316

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107028
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHG96317

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 107029

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107030
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96321

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107031
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96322

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107032
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96324

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 107033
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96325

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 107034
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96326

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107035
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96327

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96329

<400> 107036

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgaguacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107037
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHG96330

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcucucc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107038
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107039
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96334

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107040
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96335

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 107041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96336

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 107042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96338

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcu cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHG96339

<400> 107043
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107044
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHG96340

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96341

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107046
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHG96342

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107048
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96344

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107049
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96345

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107050
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96346

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96355

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96356

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96371

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96383

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107064
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96395

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 107065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHG96407

<400> 107065

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHG96419

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107067
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHG96431

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107068
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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<210> 107069
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 107070
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96479

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96491

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<210> 107073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 107074
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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hemagglutinin__InfluenzaA__AHG96563

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 107079
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<212> RNA
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hemagglutinin__InfluenzaA__AHG96575

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<210> 107080
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<212> RNA
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hemagglutinin__InfluenzaA__AHG96587

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<210> 107081
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96599

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<210> 107082
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<212> RNA
<213> Artificial Sequence

<220>
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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucggcaacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107090
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hemagglutinin__InfluenzaA__AHG96707

<400> 107090

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107091
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107092
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107093
<211> 1701
<212> RNA
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<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcau cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107094
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107095
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 107096
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96779

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107097
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagcgcac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 107101
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107102
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 107103
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107104
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107105
<211> 1701
<212> RNA
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<220>
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107110
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 107111
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107112
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHG96971

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<210> 107113
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107114
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcaagcg ccgcuccaac 480

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<210> 107116
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 107118
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107119
<211> 1701
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<220>

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<400> 107119

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<210> 107120
<211> 1701
<212> RNA
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<210> 107121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcguccgc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgccucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcaacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107122
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57431

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcguccgc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107123
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57432

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagccccag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucgagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgagg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107124
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57433

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ57434

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacccccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ57435

<400> 107126

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaaccg cggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107127
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ57436

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 107128
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHJ57437

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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cgcugcaaca ucugcaucug a 1701

<210> 107129
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ57438

<400> 107129
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgac 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagguca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cuggaccggc 420

gucgacaccg aguccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

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aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

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gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcgagggccc cuccuucuac 480

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ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

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accgucaccc acuccgucga gcuccucgag aaccagaagg agggccgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

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gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

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gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

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gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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hemagglutinin__InfluenzaA__AHJ57707

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uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

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gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcgagggccc cuccuucuac 480

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uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cuccgaccag uccugguccu acaucgucga gcgccccaac 300

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<400> 107137

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca ccccccccguc 600

accaccgagc aggaggcccu cuacggcucc ggcaaccgcu acguccgcau gggcaccgag 660

uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac gagaacuccc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagaa ggccaucgac ggcaucacca acaaggucaa cuccaucauc 1200

gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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uacgacuacc ccaaguacca gaccgagucc cgccucaacc gccagaagau cgaguccguc 1560

aagcucgaga acuucgacgu cuaccagauc cucgccaucu acuccaccgu cuccuccucc 1620

cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

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<211> 1701
<212> RNA
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<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccgac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagaaggu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccu ccuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaucgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac gagaacuccc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagaa ggccaucgac ggcaucacca acaaggucaa cuccaucauc 1200

gacaagauga acacccaguu cgaggccgcc ggccacgagu ucuccaaccu cgagcgccgc 1260

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cagugccgca ucugcaucug a 1701

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

ccccgcugcg acauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagggcgu cgagcgcuuc gagauguucc ccaaguccac cugggucggc 420

gucgacaccu ccuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga caacaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cguccccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cagugccgca ucugcaucug a 1701

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<212> RNA
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

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ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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aagcucgaga acuucgacgu cuaccagauc cucgccaucu acuccaccgu cuccuccucc 1620

cucguccucg ucggccucau ccucgccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

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<211> 1701
<212> RNA
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accgucaccc acuccgucga gcuccucgag gaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagggcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

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uacgacuacc ccaaguacca gaaggagucc cgccucaacc gccagaagau cgaguccguc 1560

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cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugcauga ucugcaucug a 1701

<210> 107142
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<212> RNA
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<220>
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accgucaccc acuccgucga gcuccucgag aacaagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugccgcauc 180

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

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aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagaccaag uccuccgagu accccgucau caagggcacc 540

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

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aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cucccgcggc 840

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aagcucgaga acuucgacgu cuaccagauc cucgccaucu acuccaccgu cuccuccucc 1620

cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

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<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca ccccccccguc 600

accaccgagc aggaggcccu cuacggcucc ggcaaccgcu acguccgcau gggcaccgag 660

uccaugaacu ucgcccgcac ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac gagaacuccc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagaa ggccaucgac ggcaucacca acaaggucaa cuccaucauc 1200

gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

<210> 107146
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca cccccccguc 600

accaccgagc aggaggcccu cuacggcucc ggcaaccgcu acguccgcau gggcaccgag 660

uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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cagugccgca ucugcaucug a 1701

<210> 107147
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57873

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cuggaccggc 420

gucgacaccg aguccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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ggccgcaucg acuacuucug guccauccuc acccccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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cucguccucg ucggccucau ccucgccaug ggccucugga ugugcuccaa cggcuccaug 1680

cacugccgca ucugcaucug a 1701

<210> 107148
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcgcaag uccuccgccu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcaa ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa caucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag gacugcgacg ccuccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac gagaacuccc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagaa ggccaucgac ggcaucacca acaaggucaa cuccaucauc 1200

gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

<210> 107149
<211> 1701
<212> RNA
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcgcaag uccuccgccu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcaa ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa caucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag gacugcgacg ccuccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

<210> 107150
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57908

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccgucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccucau cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagggcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccu ccuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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ggccgcaucg acuacuucug guccguccuc aagcccggcg agacccucaa cgucgagucc 780

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<210> 107151
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ57920

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

cccuggugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

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cagugccgca ucugcaucug a 1701

<210> 107152
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ57932

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugccgcauc 180

uccaacaagg ccccccucga ccucaaggag ugcacccucg agggcuggau ccucggcaac 240

ccccagugcg accuccuccu cggcgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu ccgcgcccuc 360

aucggcuccg gcgagggcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca accgcggcgu caccuccucc ugccccuucg gcuccggcuc cuccuucuac 480

cgcaaccucc ucuggaucgu caagcacacc accuccuccu accccgucau caagggcacc 540

uuccgcaaca ccggcgacaa guccguccuc uacuucuggg gcguccacca ccccuucgac 600

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uccaugaacu ucgcccgcgg ccccgagguc gccgcccgcc ccgucgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa caucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

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gacaagauga acacccaguu cgaggccguc ggccacgagu ucuccaaccu cgagcgccgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacc uccacgacgc caacgucaag 1380

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uacaacuacc ccaaguacca ggccgagucc cgccucaaca agcagcgcau cgaguccguc 1560

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cuggaccggc 420

gucgacaccg aguccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

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ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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<212> RNA
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca ccccccccguc 600

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uccaugaacu ucgcccgcaa ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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uacgacuacc ccaaguacca ggccgagucc cgccucaacc gccagaagau cgaguccguc 1560

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<400> 107155

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccucaaggag ugcacccucg agggcuggau ccucggcaac 240

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgucgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa caucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaucgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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<212> RNA
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcaccaucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

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<210> 107157
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<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggcccgc 420

gucgacaccg accgcggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

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<212> RNA
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

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<212> RNA
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<220>
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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

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ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

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aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccucccu ccccaucgag aacugcgacg ccaccugcca gaccgccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cguccccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccgcgagu ccacccagaa ggccaucgac ggcaucacca acaaggucaa cuccaucauc 1200

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uacaacuacc ccaaguacca gaaggagucc cgccucaacc gccagaagau cgaguccguc 1560

aagcucgaga acuucgacgu cuaccagauc cucgccaucu acuccaccgu cuccuccucc 1620

cucguccucg ucggccucau cauggccaug ggccucugga ugugcuccaa cggcuccaug 1680

cagugccgca ucugcaucug a 1701

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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHJ58037

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aucggcuacc acgccaacaa cuccaccacc aaggucgaca ccauccucga gaagaacguc 120

accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccucaaggag ugcacccucg agggcuggau ccucggcaac 240

ccccagugcg accuccuccu cggcgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ucgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacacca acuccggcgu cacccgcucc ugccccuucg gcuccggcuc cuccuucuac 480

cgcaaccucc ucuggaucau caagcacacc accuccuccu accccgucau caagggcacc 540

uuccgcaaca ccggcgacaa guccguccuc uacuucuggg gcguccacca ccccaucgac 600

accaccgagc agaacguccu cuacggcucc ggcaaccgcu acguccgcau gggcaccgag 660

uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgucgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa caucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaucgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccga gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac gagaacuccc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagcg cgccaucgac ggcaucacca ccaaggucaa cuccaucauc 1200

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aaccuccacg agcgcgucaa gucccagcuc cgcgacaacg ccaacgaccu cggcaacggc 1440

ugcuucgagu ucuggcacaa gugcgacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacca ggccgagucc cgccucaaca agcagcgcau cgaguccguc 1560

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cucguccucg ucggccucau cauggccauc ggccucugga ugugcuccaa cggcuccaug 1680

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<210> 107162
<211> 1701
<212> RNA
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<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcauc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccg acuccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca ccccccccguc 600

accaccgagc aggaggcccu cuacggcucc ggcaaccgcu acguccgcau gggcaccgag 660

uccaugaacu ucgcccgcac ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cagugccgca ucugcaucug a 1701

<210> 107163
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHJ58061

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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cuggaccggc 420

gucgacaccg aguccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

cccaaguacg ucaaguccaa gucccuccgc cucgccaccg gccuccgcaa cgucccccag 1020

aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cagugccgca ucugcaucug a 1701

<210> 107164
<211> 1701
<212> RNA
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<220>
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accgucaccc acuccgucga gcuccucgag aaccagaagg aggagcgcuu cugcaagauc 180

uccaacaagg ccccccucga ccuccgcgac ugcacccucg agggcuggau ccucggcaac 240

ccccgcugcg gcauccuccu cgccgaccag uccugguccu acaucgucga gcgccccaac 300

gcccgcaacg gcaucugcua ccccggcacc cucaacgagg ccgaggagcu caaggcccuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cuggaccggc 420

gucaacaccg aguccggcgu cuccuccgcc ugcccccucg gcaacggccc cuccuucuac 480

cgcaaccucc ucuggaucau caagcucaag uccuccgagu accccgucau ccgcggcacc 540

uucaacaaca ccggcgacaa guccauccuc uacuucuggg gcguccacca ccccccccguc 600

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uccaugaacu ucgcccgcuc ccccgagauc gccgcccgcc ccgccgucaa cggccagcgc 720

ggccgcaucg acuacuucug guccauccuc aagcccggcg agacccucaa cgucgagucc 780

aacggcaacc ucaucgcccc cugguacgcc uaccgcuucg ucaacaagga cuccaagggc 840

gccaucuucc gcuccaaccu ccccaucgag aacugcgacg ccaccugcca gaccaccgag 900

ggcgucaucc gcaccaacaa gaccuuccag aacgucuccc cccucuggau cggcgagugc 960

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aucgagaccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cucguccucg ucggccucau ccucgccaug ggccucugga ugugcuccaa cggcuccaug 1680

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<210> 107165
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL80708

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107166
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL80718

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagau cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 107167
<211> 1710
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL80729

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aacgucaaga accucuacga gaagguccgc ucccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

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<210> 107168
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL80740

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcgucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107169
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL80751

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaagaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107170
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<212> RNA
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hemagglutinin__InfluenzaA__AHL80762

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggauccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107171
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL80784

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107172
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL80795

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107173
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHL80817

<400> 107173

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aacugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 107174
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL80828

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aacugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 107175
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL80839

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 107176
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL80861

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 107181
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL80916

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 107182
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL80927

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL80946

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagau cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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hemagglutinin__InfluenzaA__AHL81049

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 107191
<211> 1701
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHL81072

<400> 107191

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<212> RNA
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__AHL81189

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107201
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hemagglutinin__InfluenzaA__AHL81212

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa gaacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107202
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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcac cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107204
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107205
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL81259

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107206
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL81271

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107207
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL81283

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107208
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107209
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagau cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107210
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107211
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<212> RNA
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hemagglutinin__InfluenzaA__AHL81340

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccaggacggc accuccuccg ccugcauccg cggcuccaag 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107212
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 107213
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL81364

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcgccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107214
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL81386

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgucaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107215
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL81397

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcaucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107218
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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<210> 107219
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107220
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL89030

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 107221
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL89042

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<210> 107222
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL89054

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107223
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL89066

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 107224
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<212> RNA
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gucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 107225
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<211> 1701
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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107228
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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<210> 107229
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<212> RNA
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hemagglutinin__InfluenzaA__AHL89138

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107230
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107231
<211> 1701
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL89162

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1698
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaccccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agcgcaucga cggcgucaag 1560

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<210> 107262
<211> 1698
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcaa guccuccuuc 480

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aucggcgacc agcgcgcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHL90157

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccaaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<212> RNA
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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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<210> 107315
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<212> RNA
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hemagglutinin__InfluenzaA__AHL90241

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<210> 107316
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL90253

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<210> 107317
<211> 1698
<212> RNA
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<220>

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<400> 107317

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaacugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

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uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107397
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hemagglutinin__InfluenzaA__AHL95092

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaugcg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107399
<211> 1701
<212> RNA
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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

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<210> 107400
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<213> Artificial Sequence

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107401
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107402
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL95152

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107403
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL95164

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<210> 107404
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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hemagglutinin__InfluenzaA__AHL95224

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHL95236

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107410
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hemagglutinin__InfluenzaA__AHL95248

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHL95260

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107412
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107413
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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<210> 107416
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107417
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107418
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL95343

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<210> 107419
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107420
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL95444

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107421
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<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107422
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucgucc gccccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107424
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<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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<220>

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aucguccgca ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107426
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL95518

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107427
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107435
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 107461

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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<210> 107462
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107464
<211> 1701
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hemagglutinin__InfluenzaA__AHL95997

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaag 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107466
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hemagglutinin__InfluenzaA__AHL96033

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107467
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107468
<211> 1701
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<400> 107468

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107469
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107470
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 107471
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107472
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL96104

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107473
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107474
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL96128

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107475
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHL96462

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107507
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hemagglutinin__InfluenzaA__AHL96569

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107508
<211> 1701
<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 107509
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107510
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107511
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107512
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107513
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL96640

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107514
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL96652

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107515
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107516
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107517
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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<210> 107518
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107519
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 107520
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL96748

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107522
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL96784

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107526
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107527
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<211> 1701
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hemagglutinin__InfluenzaA__AHL96856

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107529
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL96868

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107530
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107536
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hemagglutinin__InfluenzaA__AHL96952

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107538
<211> 1701
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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107539
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL96988

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107540
<211> 1701
<212> RNA
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107541
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaugaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107544
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97048

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107546
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL97072

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107547
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107548
<211> 1701
<212> RNA
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<220>
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<210> 107549
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<400> 107551

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 107552
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL97144

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107553
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<212> RNA
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hemagglutinin__InfluenzaA__AHL97156

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107554
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107555
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL97180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107556
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL97192

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107557
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107558
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97216

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97228

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gucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97240

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97252

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<210> 107562
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL97264

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107563
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107564
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcugcaaca ucugcaucug a 1701

<210> 107565
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107566
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL97336

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97348

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107569
<211> 1701
<212> RNA
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<220>

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107570
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL97384

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97396

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 107573
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL97420

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aucgucaaga ccaucaugaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 107575
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL97456

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL97468

<400> 107576

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<210> 107577
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL97480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107578
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL97493

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaugaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107580
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccacccagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107581
<211> 1701
<212> RNA
<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97541

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97553

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107584
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL97565

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107585
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL97577

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca agcccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107586
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hemagglutinin__InfluenzaA__AHL97589

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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<210> 107587
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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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<210> 107589
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107590
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 107591
<211> 1701
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hemagglutinin__InfluenzaA__AHL97661

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107592
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL97673

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<210> 107593
<211> 1701
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<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107594
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gaccucuucg ucgagcgcgg caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107598
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107600
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107601
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107610
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107615
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<210> 107616
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHL97961

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<210> 107617
<211> 1701
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<213> Artificial Sequence

<220>
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<210> 107618
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcgcc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107630
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107634
<211> 1701
<212> RNA

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL98212

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107638
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107639
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107640
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHL98248

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaugaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107651
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107658
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 107660
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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107661
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107662
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107664
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107669
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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<210> 107670
<211> 1701
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hemagglutinin__InfluenzaA__AHL98614

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<210> 107671
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 107672
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107680
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107708
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 107711
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107712
<211> 1701
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hemagglutinin__InfluenzaA__AHL99165

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107713
<211> 1701
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<400> 107713

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacaccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107714
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107715
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

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<210> 107716
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99237

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99249

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 107718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99261

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107719
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99273

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107721
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107722
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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<210> 107723
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107724
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99333

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99367

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99379

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107736
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hemagglutinin__InfluenzaA__AHL99498

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 107737
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107738
<211> 1701
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107739
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 107740
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99558

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107742
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99570

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107744
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL99594

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 107745
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107746
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 107747
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99641

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107749
<211> 1701
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<220>

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<400> 107749

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<210> 107750
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99677

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99689

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107760
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99796

<400> 107760
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHL99808

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99820

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgacggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99832

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99844

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99856

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ggcaacgacg acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHL99868

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ggcaacgacg acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 107767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHL99880

<400> 107767

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 107769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99904

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

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cgcugcaaca ucugcaucug a 1701

<210> 107770
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugcg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107771
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107772
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99940

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107773
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107774
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHL99964

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107775
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHL99976

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107776
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107777
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00001

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107778
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107779
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 107780
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00037

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 107781
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00061

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHM00073

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00085

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107784
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00097

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaac 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac caccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

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<400> 107785

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00120

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00132

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ggcaacgacg acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucucccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00144

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107789
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00156

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107790
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00168

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107791
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hemagglutinin__InfluenzaA__AHM00180

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacaac ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107792
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00192

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107794
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHM00216

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107795
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107796
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00240

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107797
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107798
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM00264

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107809
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHM00443

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107813
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AHM00467

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<210> 107814
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107815
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107816
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107817
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107818
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107819
<211> 1701
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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 107820
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHM00543

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<210> 107821
<211> 1701
<212> RNA
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<220>

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<210> 107822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 107833
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHM00734

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AHM00758

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<400> 107846

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 107847
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107848
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 107849
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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107852
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM00926

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 107853
<211> 1701
<212> RNA
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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107854
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hemagglutinin__InfluenzaA__AHM00950

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgucuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107855
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM00962

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107856
<211> 1701
<212> RNA
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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107857
<211> 1683
<212> RNA
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<400> 107857

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaaggagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 107858
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM24236

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 107859
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHM24248

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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uga 1683

<210> 107860
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHM98309

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107861
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98339

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

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uccgucaucg agaagaugaa cacccaguuc accgccgucg gcaaggaguu caaccaccuc 1260

gagaagcgca ucgagaaccu caacaagaag gucgacgacg gcuuccucga caucuggacc 1320

uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgaggagauc 1560

gacggcguca agcucgaguc cacccgcauc uaccagaucc ucgccaucua cuccaccguc 1620

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<210> 107862
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHM98350

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acgccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107863
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98361

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98372

<400> 107864

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98383

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107866
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98394

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107867
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98405

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 107868
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98416

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98427

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107870
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107871
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107872
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107873
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hemagglutinin__InfluenzaA__AHM98471

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 107874
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98482

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 107875
<211> 1701
<212> RNA
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<220>

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<400> 107875

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<210> 107876
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHM98504

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<210> 107877
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107878
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHM98526

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107879
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107880
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 107881
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 107882
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98570

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<210> 107883
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98581

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 107884
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98592

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<210> 107885
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98603

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107886
<211> 1701
<212> RNA

<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107887
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107888
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 107889
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98647

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107890
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98658

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 107891
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98669

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 107892
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98701

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<400> 107893

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgccc agggcuccgg cuacgccgcc 1140

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uacgacuacc cccgcuacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 107895
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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<210> 107897
<211> 1701
<212> RNA
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<210> 107898
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 107899
<211> 1701
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<210> 107900
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107901
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98809

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107902
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107903
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98831

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107904
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98836

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggauccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107905
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98847

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107906
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHM98858

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107907
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHM98877

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107908
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHM98898

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107909
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107910
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM98932

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107911
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107912
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107913
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98975

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107914
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM98997

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 107915
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM99019

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107916
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM99031

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107917
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM99043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107918
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM99054

<400> 107918

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107919
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHM99065

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107920
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHM99075

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcgacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHN00717

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaaccgcgg ccccggcucc 840

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucc ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107922
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHN00764

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

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cagugccgca ucugcaucug a 1701

<210> 107923
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHN96323

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucggcauc 1680

uga 1683

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hemagglutinin__InfluenzaA__AHN96442

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 107925
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacaccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 107926
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa ccagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107927
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa ccagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 107928
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 107929
<211> 1701
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<220>

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107930
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHV83766

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107931
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHV83767

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107932
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHV83768

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg acuccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83770

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83771

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 107935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83772

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83773

<400> 107936

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107937
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83774

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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cagugccgca ucugcaucug a 1701

<210> 107938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83775

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 107939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83776

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107940
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83777

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc ugcuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107941
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83778

<400> 107941
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83779

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107943
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83780

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107944
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83781

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107945
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83782

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107946
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83783

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

aucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83784

<400> 107947

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107948
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AHV83785

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107949
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHV83787

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107950
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucguca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107951
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83789

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107952
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHV83790

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107953
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83791

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 107954
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83792

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 107955
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107956
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107957
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83795

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccgccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107958
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83796

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107959
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83798

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83799

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 107961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83800

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 107962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83801

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83802

<400> 107963
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaggg ccucuaccag aacgucgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83803

<400> 107964
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83804

<400> 107965

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107966
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83805

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83806

<400> 107967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83807

<400> 107968
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaaggac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83808

<400> 107969
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgagg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83809

<400> 107970
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83810

<400> 107971
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83812

<400> 107972

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgaguacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83813

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83814

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc aaccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83815

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107976
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83816

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107977
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83817

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucgucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83818

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83819

<400> 107979
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83821

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucguca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83822

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucuccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucguca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccaucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107982
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83823

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107983
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83824

<400> 107983

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc aaccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107984
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83825

<400> 107984
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83826

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacuuca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107986
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83827

<400> 107986
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 107987
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHV83828

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107988
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 107989
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHV83830

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107990
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHV83831

<400> 107990

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaucgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107991
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83832

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107992
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83833

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 107993
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83834

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 107994
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83836

<400> 107994
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107995
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83837

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107996
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83838

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107997
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83839

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107998
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 107999
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83841

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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cagugccgca ucugcaucug a 1701

<210> 108000
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83842

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 108001
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83843

<400> 108001

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108002
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83844

<400> 108002
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108003
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83845

<400> 108003
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108004
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83846

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108005
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83847

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108006
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83848

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108007
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83849

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108008
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83850

<400> 108008

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaaggcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108009
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83851

<400> 108009
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108010
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHV83852

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108011
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHV83853

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagacccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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<210> 108012
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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHV83855

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108013
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHV83856

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108014
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83857

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108015
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83858

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108016
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83859

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108017
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83861

<400> 108017
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108018
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83862

<400> 108018
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108019
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83863

<400> 108019

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108020
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83864

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108021
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83866

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccauccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108022
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83867

<400> 108022
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108023
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83868

<400> 108023
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108024
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83869

<400> 108024
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108025
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83870

<400> 108025
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108026
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHV83871

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108027
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108028
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accgucgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83874

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108030
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83875

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108031
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83876

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108032
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83877

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucaagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108033
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83878

<400> 108033
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108034
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83879

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108035
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83882

<400> 108036
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83883

<400> 108037

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108038
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83884

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108039
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83885

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108040
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83887

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108041
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83888

<400> 108041
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83889

<400> 108042
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108043
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83890

<400> 108043
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108044
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83891

<400> 108044

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108045
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83893

<400> 108045
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108046
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83894

<400> 108046
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83895

<400> 108047
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagacc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108048
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83896

<400> 108048
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108049
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<212> RNA
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hemagglutinin__InfluenzaA__AHV83897

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108050
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHV83898

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgucaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108051
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108052
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83900

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108053
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83901

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108054
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83902

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108055
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83903

<400> 108055

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108056
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83904

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108057
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83905

<400> 108057
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108058
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83906

<400> 108058
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108059
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83907

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108060
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83908

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caagaagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83911

<400> 108061
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83912

<400> 108062

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83913

<400> 108063
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83915

<400> 108064
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83916

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108066
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83917

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83919

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83920

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83921

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83922

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83923

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgaguacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83924

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108073
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<220>

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<400> 108073

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgaguacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaccaagau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108074
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108077
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83929

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83930

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83931

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83932

<400> 108080

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108081
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83933

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgcccucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83934

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83935

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108084
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83937

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83938

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83939

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83940

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuucaugg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgaccgcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108088
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<220>
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hemagglutinin__InfluenzaA__AHV83941

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83943

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHV83944

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacgagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHV83945

<400> 108091

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108092
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83947

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucaccg ucaagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108093
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83948

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108094
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83949

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108095
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHV83950

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__AHV83953

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa cgagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg caccggcaag 840

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108100
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccgucaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgucgacc agaagacccu cuaccgcacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 108101
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35584

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108102
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35608

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108103
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 108104
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<400> 108109

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<210> 108110
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hemagglutinin__InfluenzaA__AHZ35716

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108111
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108112
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108113
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 108114
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108115
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108116
<211> 1701
<212> RNA
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<400> 108116

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 108117
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ35834

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35845

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108119
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35856

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108120
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35867

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucguccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35879

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35891

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108123
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ35902

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108124
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35913

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

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aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgaggagauc 1560

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<210> 108125
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ35924

<400> 108125
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108126
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ35935

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccgccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108137
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ36070

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcac cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108138
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHZ36081

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaaccgcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108139
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ36092

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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cagugccgca ucugcaucug a 1701

<210> 108140
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ36103

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108141
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ36114

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108142
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ36125

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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hemagglutinin__InfluenzaA__AHZ36169

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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hemagglutinin__InfluenzaA__AHZ36180

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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hemagglutinin__InfluenzaA__AHZ36191

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hemagglutinin__InfluenzaA__AHZ36203

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ36260

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccuuc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108155
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108156
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHZ36283

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108157
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ36294

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108158
<211> 1701
<212> RNA
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<220>
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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108159
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__AHZ36362

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gucaccguca cccacuccau caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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cagugccgca ucugcaucug a 1701

<210> 108163
<211> 1701
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<400> 108163

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ36397

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<210> 108165
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ36409

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108166
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108177
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

gacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacga cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108191
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<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgagcgcccc caggucaacg gccucuccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108192
<211> 1683
<212> RNA

<213> Artificial Sequence

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

gacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacga cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

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<211> 1683
<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacga cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108194
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<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

<210> 108195
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ39794

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108196
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ39806

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108205
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 108206

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108210
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 108217
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108220
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ40120

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108221
<211> 1701
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hemagglutinin__InfluenzaA__AHZ40130

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caagaacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108222
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108224
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggccgcugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108225
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108226
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 108227
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ40201

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108228
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHZ40213

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<210> 108229
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ40225

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108261
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hemagglutinin__InfluenzaA__AHZ40618

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108262
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ40626

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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<210> 108263
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108264
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108265
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108266
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<212> RNA
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hemagglutinin__InfluenzaA__AHZ40674

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<210> 108267
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108268
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108279
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

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accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

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<210> 108281
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 108282
<211> 1701
<212> RNA

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hemagglutinin__InfluenzaA__AHZ40914

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<210> 108283
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ40925

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<210> 108284
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ40936

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108293
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108294
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108295
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108296
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ41068

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108297
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ41079

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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<210> 108298
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ41090

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 108299
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ41101

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<210> 108300
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108301
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41123

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108302
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41134

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108303
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ41145

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108304
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41156

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108305
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41167

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108306
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41178

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 108307
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AHZ41189

<400> 108307

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 108308
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41246

<400> 108308
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag gagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108309
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41263

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108310
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41281

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108311
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41292

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108312
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41303

<400> 108312
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41314

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108314
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41325

<400> 108314

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cagugccgca ucugcaucug a 1701

<210> 108315
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41336

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108316
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 108316
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag gagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108317
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108318
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41366

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108319
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41377

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108320
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41388

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108321
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41410

<400> 108321
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108322
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41432

<400> 108322
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108323
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41441

<400> 108323
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag gagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108325
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108327
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 108328
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

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<210> 108329
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hemagglutinin__InfluenzaA__AHZ41506

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<210> 108330
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<210> 108331
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hemagglutinin__InfluenzaA__AHZ41528

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108332
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41539

<400> 108332

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108333
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHZ41550

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108334
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AHZ41561

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108335
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41572

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacgagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108336
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41583

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108337
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41594

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 108338
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41605

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108339
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ41616

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

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hemagglutinin__InfluenzaA__AHZ41671

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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hemagglutinin__InfluenzaA__AHZ41704

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108348
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108349
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AHZ41726

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108350
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41737

<400> 108350

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108351
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ41748

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg agcagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108352
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ41759

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

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<210> 108353
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ42561

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg caccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108354
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ42572

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108355
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108356
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108357
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccauc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108358
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108359
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108360
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 108361
<211> 1701
<212> RNA
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<220>

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<400> 108361

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<210> 108362
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ42666

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108364
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108365
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108366
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108367
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108368
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<212> RNA
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<400> 108368

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108369
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108370
<211> 1701
<212> RNA
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<220>
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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaaggag 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108375
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hemagglutinin__InfluenzaA__AHZ42820

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccgagucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108377
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auggucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108378
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108387
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

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uga 1683

<210> 108388
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

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<212> RNA
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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

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<212> RNA

<213> Artificial Sequence

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

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aacuggaccc gcgacuccau caccgagguc ugguccuaca acgccgagcu ccucgucgcc 1320

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108391
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<212> RNA
<213> Artificial Sequence

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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uga 1683

<210> 108392
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ59855

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 108393
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ59867

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uga 1683

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<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

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cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108395
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ59915

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108396
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108397
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>

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<400> 108397

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccaguccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108398
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ59951

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108399
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ59963

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108400
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ59988

<400> 108400
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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uga 1683

<210> 108401
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ60000

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108402
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AHZ60012

<400> 108402
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aucugccucg gccaccacgc cgucuccaac ggcaccaagg ucaacacccu caccgagcgc 120

ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

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aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 108403
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

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<211> 1683
<212> RNA
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hemagglutinin__InfluenzaA__AHZ60036

<400> 108404

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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auggagaacc agcacaccau cgaccucgcc gacuccgaga uggacaagcu cuacgagcgc 1380

gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108405
<211> 1683
<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 108406
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<212> RNA
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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

<210> 108407
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ60072

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uga 1683

<210> 108408
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AHZ60084

<400> 108408
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uga 1683

<210> 108409
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AHZ60096

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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cuccucucca acaccgacga cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

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caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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uga 1683

<210> 108410
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC64889

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108411
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73738

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108412
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73739

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcca cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108413
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73740

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucgacc gcgagaagau cgacggcguc 1560

cgccucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108414
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73741

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca ccgcugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gauccgcggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108415
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIC73742

<400> 108415

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108416
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73743

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108417
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73744

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaaccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgcccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73745

<400> 108418
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cugggcccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108419
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73746

<400> 108419
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucacccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108420
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73747

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108421
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73748

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108422
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73749

<400> 108422

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagcgcugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccacu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca ucaccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108423
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73750

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73754

<400> 108424
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108425
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73755

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108426
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73756

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108427
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73757

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108428
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73758

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108429
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73760

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73761

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73762

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccagaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73763

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108433
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIC73765

<400> 108433

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108434
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73766

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108435
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIC73767

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucaucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagauccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108436
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73768

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108437
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73769

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108438
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73770

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108439
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73771

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108440
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73772

<400> 108440

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108441
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73773

<400> 108441
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108442
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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<210> 108443
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108444
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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108445
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hemagglutinin__InfluenzaA__AIC73778

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108446
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108447
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<212> RNA
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hemagglutinin__InfluenzaA__AIC73780

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108448
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108449
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<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 108457
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73790

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108458
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73791

<400> 108458

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ugcaucggcu accacgccaa caacuccacc gacaccaucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108459
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73792

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108460
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73793

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108461
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73794

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108462
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73796

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108463
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73797

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73798

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108465
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIC73800

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108466
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIC73801

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108467
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73802

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108468
<211> 1701
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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108469
<211> 1701
<212> RNA
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<220>

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108470
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73805

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIC73806

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108472
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIC73807

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acaacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcuccgccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacgagguc 1560

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<210> 108475
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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<210> 108477
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108478
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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 108479
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<210> 108480
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108485
<211> 1701
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 108486
<211> 1701
<212> RNA
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<210> 108487
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<400> 108487

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<210> 108488
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIC73834

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgacgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg gccagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<211> 1701
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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<210> 108496
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<400> 108496
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108497
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa ccaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 108498
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AID70444

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cgccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg ucguccucga gaacgagcgc acccucgagu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagguc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuucaa cggcucccuc 1680

cagugccgca ucuacaucug a 1701

<210> 108499
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70445

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg ucguccucga gaacgagcgc acccucgagu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcauc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccagg ucgucucccu cggcgccauc uccuucugga ugugcuucaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108500
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70446

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccagg ucgucucccu cggcgccauc uccuucugga ugugcuucaa cggcucccuc 1680

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<210> 108501
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AID70447

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 108502
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70448

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108503
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70449

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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hemagglutinin__InfluenzaA__AID70452

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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hemagglutinin__InfluenzaA__AID70453

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 108508
<211> 1701
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hemagglutinin__InfluenzaA__AID70454

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hemagglutinin__InfluenzaA__AID70455

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<210> 108510
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<210> 108511
<211> 1701
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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg ucguccucga gaacgagcgc acccucgagu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa guucgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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uacgccuccc uccgcuccau cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc aaguccgccu ccugcaagcg cggcuccgac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuacaagua ccccgcccuc 540

aaggucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108515
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108516
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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108517
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108518
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70465

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108519
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacauc 1320

ggcgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108520
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hemagglutinin__InfluenzaA__AID70467

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

uccaccaaga agucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108521
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucac caucuccugc 1620

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<210> 108522
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacauccccu cccgcgucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucac caucuccugc 1620

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<210> 108523
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 108524
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70471

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108525
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 108526
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108527
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgccug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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augggcaaga ccaucggcaa guuccaccag aucgucaacg aguucuccga ggucgagggc 1260

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ggcgagcucc ucgucgcccu cgagaaccac cacgccaucg accucaccga cuccgagaug 1380

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aucuacgacc gcgacgucua ccgcgacgag gcccucaaca accgcuucca caucaagggc 1560

gucgagcuca aguccggcua caaggacugg aucaucugga ucuccuccac cgaguccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaaga agucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucuacgacc acgacgucua ccgcaacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uccuccucca ccggcgagau cugcaaccgc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccaccaaga agucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108532
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108533
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AID70634

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

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<210> 108534
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72902

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108535
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagg ccuccggccg caucaccguc 660

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg guccucugga ucuccuucgc caucuccugc 1620

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<210> 108536
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 108537
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 108538
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 108539
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108540
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108541
<211> 1701
<212> RNA
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<220>

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<210> 108542
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72910

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108543
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72912

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc ccgcgccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108545
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108546
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIF72914

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cggcggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72915

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccuccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72916

<400> 108548

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIF72917

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcgaca ucugcaucug a 1701

<210> 108550
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIG44693

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aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

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ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaaggacaa cgccuacccc auccaggacg cccaguacac caacaaccag 540

gagaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc guccacggcc ucaugggccg caucaacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccaacgg caaccucauc 780

gcccccuggu acggccacau ccucuccggc aagucccacg gccgcauccu caagaccgac 840

cucaagcgcg gcaacugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcauc 960

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uga 1683

<210> 108551
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10728

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108552
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108554
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108555
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108556
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10733

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108557
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108558
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10735

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108559
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<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIJ10736

<400> 108559

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108560
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10737

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10738

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcacuuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10740

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108564
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIJ10742

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 108565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10743

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10744

<400> 108566

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108567
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10745

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108568
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10747

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108569
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10748

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg acuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagaac 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108570
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108571
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10752

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc cauguccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108572
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10753

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 108573
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10754

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10755

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108575
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10756

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108576
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10757

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108577
<211> 1701
<212> RNA
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<220>

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<400> 108577

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108578
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10760

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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cgcugcaaca ucugcaucug a 1701

<210> 108580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10761

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 108581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10762

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10763

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10764

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108584
<211> 1701
<212> RNA
<213> Artificial Sequence

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<400> 108584

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108585
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<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108586
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108587
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10768

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 108588
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10769

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108589
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 108590
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIJ10771

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108591
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10772

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108592
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10773

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108593
<211> 1701
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hemagglutinin__InfluenzaA__AIJ10774

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108594
<211> 1701
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hemagglutinin__InfluenzaA__AIJ10776

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108595
<211> 1701
<212> RNA
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<220>

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<400> 108595

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uuccuccucu gcgucguccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108596
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10778

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108597
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10780

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108598
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIJ10781

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108599
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108600
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108601
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108602
<211> 1701
<212> RNA
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<400> 108602

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108603
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10786

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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<210> 108604
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIJ10787

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108605
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108606
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108607
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__AIJ29349

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108613
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<220>

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<210> 108614
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108615
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108617
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108618
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108619
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hemagglutinin__InfluenzaA__AIL93634

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108620
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<212> RNA
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<400> 108620

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<210> 108621
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hemagglutinin__InfluenzaA__AIL93657

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108622
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIL93669

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108623
<211> 1701
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hemagglutinin__InfluenzaA__AIL93681

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcuc cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108624
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93692

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 108625
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108626
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93728

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108627
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIL93740

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108628
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__AIL93752

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108629
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93764

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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hemagglutinin__InfluenzaA__AIL93776

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108631
<211> 1701
<212> RNA
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108632
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93812

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108633
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIL93824

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108634
<211> 1701
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<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93836

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcuc cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108635
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIL93847

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcuc cgccggcucc 840

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<210> 108636
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIL93858

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108637
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIL93870

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccau caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgcccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucucccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcuc cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<400> 108656

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108660
<211> 1701
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hemagglutinin__InfluenzaA__AIL94294

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108661
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 108662
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108665
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108666
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<210> 108667
<211> 1701
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<210> 108668
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIL94411

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108669
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 108675
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108681
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<210> 108682
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<210> 108683
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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108697
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<210> 108699
<211> 1701
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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108701
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hemagglutinin__InfluenzaA__AIL94800

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108702
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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<400> 108703

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 108704
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 108705
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108706
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIL94859

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108707
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108708
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIL94883

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108709
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108710
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 108713
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108714
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIL94954

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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<210> 108715
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<212> RNA
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hemagglutinin__InfluenzaA__AIL94965

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<210> 108716
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIM55837

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accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcucucc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108717
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM55848

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cauccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacacc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108718
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM55859

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108719
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIM55870

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108720
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM55881

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108721
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIM55893

<400> 108721

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108722
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM55904

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108723
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM55915

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108724
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM55926

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

ggcaagugcc ccaaguacgu caaguccacc aagcuccgcc ucgccaccgg ccuccgcaac 1020

gucccucca uccagucccg cggccucuuc ggcgccaucg ccggcuucau cgagggcggc 1080

uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

uacgccgccg accucaaguc cacccagaac gccaucgaca agaucaccaa caaggucaac 1200

uccgucaucg agaagaugaa cacccaguuc accgccgucg gcaaggaguu caaccaccuc 1260

gagaagcgca ucgagaaccu caacaagaag gucgacgacg gcuuccucga caucuggacc 1320

uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

gacggcguca agcucgaguc cacccgcauc uaccagaucc ucgccaucua cuccaccguc 1620

gccuccuccc ucguccucgu cgucucccuc ggcgccaucu ccuucuggau gugcuccaac 1680

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<210> 108725
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIM55937

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108726
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIM55948

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108727
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM55962

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108728
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM55984

<400> 108728

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108729
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM55995

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56017

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggccacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108731
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56028

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggccacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108732
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56039

<400> 108732
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgaggccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108733
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56050

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcggcaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108734
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56061

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56083

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56105

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56116

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIM56127

<400> 108739

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108740
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56138

<400> 108740
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56149

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56160

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56171

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56182

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaaca aggagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56193

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaaggu caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56204

<400> 108746

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56215

<400> 108747
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56226

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108749
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56237

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108750
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIM56259

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56270

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccguca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56281

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108753
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56292

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagauc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56303

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108755
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56314

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aagcucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108756
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56325

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108757
<211> 1701
<212> RNA
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<220>

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<400> 108757

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa caucccccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108758
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AIM56347

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56358

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucaagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56369

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56391

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108763
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56402

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56413

<400> 108764

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaccaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56425

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56436

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56447

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108768
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56469

<400> 108768
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56480

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 108770
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56491

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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hemagglutinin__InfluenzaA__AIM56502

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108775
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<212> RNA
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<220>

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<400> 108775

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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<210> 108776
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 108777
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<210> 108778
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacgagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108779
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56590

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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gucccucca uccaguccccg cggccucuuc ggcgccaucg ccggcuucau cgagggcggc 1080

uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacgaca ccugcaugga guccgucaag 1500

aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

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<210> 108780
<211> 1710
<212> RNA
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hemagglutinin__InfluenzaA__AIM56601

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

ggcaagugcc ccaaguacgu caaguccacc aagcuccgcc ucgccaccgg ccuccgcaac 1020

guccccucca uccagucccg cggccucuuc ggcgccaucg ccggcuucau cgagggcggc 1080

uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

gacggcguca agcucgaguc cacccgcauc uaccagaucc ucgccaucua cuccaccguc 1620

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ggcucccucc agugccgcau cugcaucuga 1710

<210> 108781
<211> 1710
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIM56612

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa caccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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guccccucca uccagucccg cggccucuuc ggcgccaucg ccggcuucau cgagggcggc 1080

uggaccggca uggucgacgg cugguacggc uaccaccacc agaacgagca gggcuccggc 1140

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaaca ccugcaugga guccgucaag 1500

aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

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<210> 108782
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56623

<400> 108782

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaccug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108783
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56634

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc aacuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108784
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56645

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108785
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56656

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca acaucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108786
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56667

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108787
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56678

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg uccccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108788
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56689

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108789
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hemagglutinin__InfluenzaA__AIM56700

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108790
<211> 1710
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56711

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg uccccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc aaccagcuca agaacaacgc caaggagauc 1440

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aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

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ggcucccucc agugccgcau cugcaucuga 1710

<210> 108791
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIM56722

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu cccgcaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108792
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56733

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 108793
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AIM56744

<400> 108793

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108794
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AIM56755

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108795
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<212> RNA
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hemagglutinin__InfluenzaA__AIM56766

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu caccucccuc cccuuccaga acauccaccc caucaccauc 960

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uacaacgccg agcuccucgu ccuccucgag aacgagcgca cccucgacua ccacgacucc 1380

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aacggcaccu acgacuaccc caaguacucc gaggaggcca agcucaaccg cgagaagauc 1560

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<210> 108796
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hemagglutinin__InfluenzaA__AIM56777

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gucaccguca cccacuccgu caaccuccuc gagggcaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuaccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108797
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108798
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108799
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIM56810

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 108800
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108801
<211> 1683
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIN76383

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<210> 108802
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIP93103

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cgcuacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

gagaccgacg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

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hemagglutinin__InfluenzaA__AIP93115

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cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

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<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<211> 1701
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<211> 1683
<212> RNA
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hemagglutinin__InfluenzaA__AIR94116

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgccguccu ccucggcuuc aucaccuggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__AIT38344

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cuccgcggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccu acaacggcaa gggcaacuuc 480

uacaagaacc uccucuggcu cacccgcaag aacggccucu accccaaccu cuccaagucc 540

uacaccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucaaggacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagauc 1380

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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ugccgcaucu gcaucuga 1698

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

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uacaagaacc uccucuggcu cacccgcaag aacggccucu accccaaccu cuccaagucc 540

uacaccaaca acaaggagaa ggagguccuc auccucuggg gcguccacca ccccuccaac 600

aucgaggacc agcgcacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacaacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108814
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108815
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 108816
<211> 1704
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIU46609

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<210> 108817
<211> 1689
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIU46714

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aaguacuccc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggacggcug gacccagcac 420

aagaccgacg gcggcuccaa ggccugcgcc gucuccggca agcaguccuu cuuccgcaac 480

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacaacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaagcgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

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<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AIV09219

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccacc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccggcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcagcg ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ccuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gacaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108819
<211> 1701
<212> RNA
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaacugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu acgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca acggcaagcu caaccgccuc 1200

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accuacgacc acgacgccua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108820
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccgacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu acgagggcac cggccaggcc 1140

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgccua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108821
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AIW60691

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaagg ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccgacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

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aacgucacca ugcccaacaa cgacaaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcaucuccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucgagaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108822
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIW60692

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaagg ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggccgcau cugcgacucc ccccaccgca uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccgacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucac caacgagggc 420

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<210> 108823
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<220>
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hemagglutinin__InfluenzaA__AIW60693

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggccgcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cacugcgacg gcuuccagaa caaggagugg 300

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<210> 108824
<211> 1701
<212> RNA
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<220>
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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AIW60695

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcggcau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg ccgcuccaac 480

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hemagglutinin__InfluenzaA__AIW60701

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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uggcucaccc agaaggacaa caccuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucaacuac 720

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uga 1683

<210> 108836
<211> 1683
<212> RNA
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ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaagacc ugcuccgacu ccuucuaccg cuccaugcgc 480

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aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcacc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucaacuac 720

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uggcucaccc gcaagaacgg cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

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uga 1683

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uga 1683

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accaccaccg gcggcuccaa ggccugcgcc gucuccggca agcccuccuu cuuccgcaac 480

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJI80137

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<210> 108841
<211> 1701
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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108842
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80161

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108843
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80172

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

ucccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108844
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJI80196

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108845
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80208

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgaccgc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108846
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80220

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108847
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AJI80232

<400> 108847

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<210> 108848
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80244

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

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<210> 108849
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80256

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108850
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108851
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108852
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcuc cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 108853
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 108854
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJI80315

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 108855
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80326

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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<210> 108856
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80337

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaugu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccaacg ccuacgucuu cgucggcacc 660

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108857
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80348

<400> 108857
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108858
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80360

<400> 108858
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108859
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80372

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108860
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80384

<400> 108860
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108861
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80395

<400> 108861
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108862
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80406

<400> 108862
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108863
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80417

<400> 108863
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108864
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJI80428

<400> 108864
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108865
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<220>

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<400> 108865

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108866
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 108867
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AJI80474

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gucaccguca cccacuccau caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108868
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80485

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccau caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108869
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80496

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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cagugccgca ucugcaucug a 1701

<210> 108870
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80507

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108871
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJI80518

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108872
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ98765

<400> 108872

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aacuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108873
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hemagglutinin__InfluenzaA__AJJ98777

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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<210> 108874
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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<210> 108875
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108876
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108877
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108878
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108879
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108880
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ98861

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

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uccuccauca ugaaguccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 108881
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ98873

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108882
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AJJ98885

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108883
<211> 1701
<212> RNA
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<220>

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagaaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108884
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AJJ98909

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 108885
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJJ98921

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 108886
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ98933

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 108887
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ98945

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 108888
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ98957

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

uccuccucca ccggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacuccuucu ucucccgccu caacuggcuc acccacucca aguucaagua ccccgcccuc 540

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108889
<211> 1701
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108890
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 108891
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108892
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108894
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99029

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AJJ99041

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108896
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcugcuucc gcaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108906
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccaac 480

aacuccuucu ucucccgccu caacuggcuc acccaccuca aguucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc ccgcguccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcgccga cgcccccauc ggcaagugca acuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108907
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<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 108908
<211> 1701
<212> RNA
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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcaagcg caaguccgac 480

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aacgucacca ugcccaacaa cgaggaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 108909
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108910
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 108911
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AJJ99244

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

ggcuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 108912
<211> 1701
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<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaacc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucgucaugu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaaggaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccaucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 108915
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 108917
<211> 1698
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AJJ99324

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99335

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 108919
<211> 1701
<212> RNA
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<220>

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<400> 108919

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108920
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hemagglutinin__InfluenzaA__AJJ99368

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108921
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJJ99379

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108922
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<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108923
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AJJ99401

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108924
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99413

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108925
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99425

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 108926
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99437

<400> 108926

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccucccu cuccaagucc 540

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 108927
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99449

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccaa ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108928
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AJJ99461

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108929
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99483

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 108930
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJJ99494

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gucuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 108931
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99505

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

uccaaguacu ccaagaaguu caagcccgag aucgccgucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaagggcu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108932
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99516

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108933
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99527

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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<210> 108934
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99538

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108935
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99549

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac augugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgc cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108936
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99560

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108937
<211> 1701
<212> RNA
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<400> 108937

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acauccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108938
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99582

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108939
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99593

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108940
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99604

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gcccccgcgu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108941
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99616

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

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aucgccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108942
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99628

<400> 108942
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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108943
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99640

<400> 108943
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucgccaacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

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<210> 108944
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99652

<400> 108944

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucgccgacc agaagacccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

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<210> 108945
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99664

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

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uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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<210> 108946
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99675

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99686

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108948
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99697

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 108949
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99708

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108950
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99719

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

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gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108959
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99822

<400> 108959
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108960
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99833

<400> 108960
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccucaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99844

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108962
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJJ99855

<400> 108962

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacucc accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108963
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99866

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cucaagggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99877

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacguccgc 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108965
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99888

<400> 108965
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcga cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108966
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99899

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa ccucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc cucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacggcc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccgucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108967
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99910

<400> 108967
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagac cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108968
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99921

<400> 108968
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108969
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99932

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcgaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99943

<400> 108970
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99954

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ccuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaacugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJJ99965

<400> 108972
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccac aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108973
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__AJJ99989

<400> 108973

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca ccccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacucca agaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagcgcucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108974
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00001

<400> 108974
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgagaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108975
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJK00012

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac caccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcgacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108976
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJK00023

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccgcgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accuccucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 108977
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__AJK00034

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagggc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108978
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJK00045

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccaccaugau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108979
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJK00056

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc accgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108980
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00067

<400> 108980

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 108981
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00079

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gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

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cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga gaacuccuuc 480

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

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guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108982
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00091

<400> 108982
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccaucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgucc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

ggccgcauca acuacuacug gacccuccuc gagcccggcg acaccaucau cuucgaggcc 780

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

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caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

gucgacggcu gguacggcua ccaccaccag aacgagcagg gcuccggcua cgccgccgac 1140

cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccgucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcgucu gcaucuga 1698

<210> 108983
<211> 1698
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00103

<400> 108983
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacuccc acaacggcaa gcucugccuc 180

cucaagggca ucgccccccu ccagcucggc aacugcuccg ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu caucuccaag gaguccuggu ccuacaucgu cgagaagccc 300

aaccccgaga acggcaccug cuaccccggc cacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccgg cgucuccgcc uccugcuccc acaacggcga guccuccuuc 480

uaccgcaacc uccucuggcu caccggcaag aacggccucu accccaaccu cuccaagucc 540

uacgccaaca acaaggagaa ggagguccuc guccucuggg gcguccacca cccccccaac 600

aucggcgacc agaaggcccu cuaccacacc gagaacgccu acgucuccgu cgucuccucc 660

cacuacuccc gcaaguucac ccccgagauc gccaagcgcc ccaagguccg cgaccaggag 720

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gccaucaacu ccucccuccc cuuccagaac guccaccccg ucaccaucgg cgagugcccc 960

aaguacgucc gcuccgccaa gcuccgcaug gucaccggcc uccgcaacau ccccuccauc 1020

caguccccgcg gccucuucgg cgccaucgcc ggcuucaucg agggcggcug gaccggcaug 1080

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cagaagucca cccagaacgc caucaacggc aucaccaaca aggucaacuc cgucaucgag 1200

aagaugaaca cccaguucac cgccgucggc aaggaguuca acaagcucga gcgccgcaug 1260

gagaaccuca acaagaaggu cgacgacggc uucaucgaca ucuggaccua caacgccgag 1320

cuccucgucc uccucgagaa cgagcgcacc cucgacuucc acgacuccaa cgucaagaac 1380

cucuacgaga aggucaaguc ccagcucaag aacaacgcca aggagaucgg caacggcugc 1440

uucgaguucu accacaagug caacgacgag ugcauggagu ccgucaagaa cggcaccuac 1500

gacuacccca aguacuccga ggaguccaag cucaaccgcg agaagaucga cggcgucaag 1560

cucgagucca ugggcgucua ccagauccuc gccaucuacu ccaccgucgc cuccucccuc 1620

guccuccucg ucucccucgg cgccaucucc uucuggaugu gcuccaacgg cucccuccag 1680

ugccgcaucu gcaucuga 1698

<210> 108984
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00114

<400> 108984
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaacg ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108985
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJK00125

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcgagg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac caacuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccgucuac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108986
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJK00136

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 108987
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00166

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcaagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 108988
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00177

<400> 108988
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcaga ucaagcucua ccagaacccc accaccuacg ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag cccgacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 108989
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJK00188

<400> 108989
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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcaga ucaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag cccgacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

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ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca ccgcugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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<210> 108998
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hemagglutinin__InfluenzaA__AJY79343

<400> 108998

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cugguccgac 420

cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacgac gccuacccca ccaucaagaa guccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacuc caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<210> 108999
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<212> RNA
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accgucaccc gcgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cugguccgac 420

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aacgucgucu ggcucaccaa gaagaacgac gccuacccca ccaucaagaa guccuacaac 540

aacaccaacc aggaggaccu ccucguccuc uggggcaucc accaccccaa cgacgccgcc 600

gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgagc ucgaguacuc caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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<210> 109001
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109002
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<212> RNA

<213> Artificial Sequence

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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guccagcuca agcucggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

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<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu cgaccuccuc gaggacaagc acaacggccg ccucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg aguccaacaa gggcgucacc gccgccugcc cccaggccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 109004
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AKA59353

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cccaaccacg acuccuccaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcagaa gcucuaccag aacgaggacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109005
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AKA59355

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgcccgcucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaaccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagauccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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hemagglutinin__InfluenzaA__AKE37137

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg accccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccacc 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgccuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacguccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109007
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<212> RNA
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hemagglutinin__InfluenzaA__AKS48035

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accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagacc cucaucaucc ccaaguccuc cuggcccaac 420

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aacaccuacc gcgaggaccu ccucauccuc uggggcaucc accacuccaa caacgccgcc 600

gagcagacca accucuacaa gaaccccacc accuacgucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgagcccaa gaucgccacc cgcucccagg ucaacggcca gcgcggccgc 720

auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

aacuucaucg cccccgagua cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgaga uggaguacgg ccacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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hemagglutinin__InfluenzaA__ALA08472

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109009
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109010
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALA08478

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagcgcugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 109011
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08479

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109012
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109013
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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<210> 109014
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hemagglutinin__InfluenzaA__ALA08483

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109016
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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hemagglutinin__InfluenzaA__ALA08491

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 109019
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<212> RNA
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hemagglutinin__InfluenzaA__ALA08492

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109020
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08493

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109021
<211> 1701
<212> RNA
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109022
<211> 1701
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<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109025
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109026
<211> 1701
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hemagglutinin__InfluenzaA__ALA08499

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109027
<211> 1701
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<220>

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<210> 109028
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08502

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109029
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109030
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALA08504

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109031
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109032
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109033
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109034
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALA08508

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109035
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08509

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109036
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08510

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109037
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccu ccugcauccg ccgcuccucc 480

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109038
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109039
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 109040
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109041
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109042
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALA08517

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109043
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109044
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hemagglutinin__InfluenzaA__ALA08520

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109045
<211> 1701
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<400> 109045

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109048
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109052
<211> 1701
<212> RNA
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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__ALA08530

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacaacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109056
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109059
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109060
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALA08537

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109061
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08538

<400> 109061
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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109062
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08539

<400> 109062
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109063
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALA08540

<400> 109063

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109064
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08541

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109065
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08542

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109066
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08543

<400> 109066
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccaccaagc gcucccagca ggccgccauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109067
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08545

<400> 109067
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109068
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08546

<400> 109068
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109069
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08548

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucgc ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109070
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08549

<400> 109070

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ccggcgucau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac ccgcaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109071
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08550

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109072
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08551

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109073
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08552

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109074
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08553

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109075
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALA08554

<400> 109075
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca uguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109076
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08555

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aucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109077
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALA08556

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcaucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109078
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08557

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109079
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08558

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109080
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08559

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacuccg ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109081
<211> 1701
<212> RNA
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<220>

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<400> 109081

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109082
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08561

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109083
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08563

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109084
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgccccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caccuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109085
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08572

<400> 109085
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugcc gcuccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109086
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08573

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109087
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08574

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagaucu ccggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109088
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08575

<400> 109088

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109089
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08576

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109090
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08577

<400> 109090
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109091
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08579

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109092
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALA08580

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109093
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALA08582

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109094
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109095
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109096
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALA08585

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109097
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08586

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109098
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08587

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109099
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALA08588

<400> 109099

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109100
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109101
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109103
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109104
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<212> RNA
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hemagglutinin__InfluenzaA__ALA08594

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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hemagglutinin__InfluenzaA__ALA08595

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109106
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08596

<400> 109106

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<210> 109107
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALA08597

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109108
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALA08598

<400> 109108
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109111
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109115
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109116
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hemagglutinin__InfluenzaA__ALA08607

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccgcu ccuccggccg caucaccguc 660

uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109117
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<220>

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<400> 109117

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccacaaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgacaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109118
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08610

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109119
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccgca uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 109120
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109121
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08614

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<210> 109122
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08615

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109123
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALA08616

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<400> 109124

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<211> 1701
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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109128
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109129
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109130
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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hemagglutinin__InfluenzaA__ALA08663

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109169
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109171
<211> 1701
<212> RNA
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<220>

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<400> 109171

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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<210> 109172
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<212> RNA
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hemagglutinin__InfluenzaA__ALA08672

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109174
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109177
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08677

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<210> 109179
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109180
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALA08680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109182
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109183
<211> 1701
<212> RNA
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109184
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALA08684

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109185
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109186
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALA08687

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109187
<211> 1701
<212> RNA
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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31616

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31619

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ALE31620

<400> 109196

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109198
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109202
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31629

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109204
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31632

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109205
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109206
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ALE31638

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109209
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31639

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109210
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<220>
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hemagglutinin__InfluenzaA__ALE31640

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

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<211> 1701
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hemagglutinin__InfluenzaA__ALE31641

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109212
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31642

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109213
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31643

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caccgccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109214
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31644

<400> 109214

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109215
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31645

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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<210> 109216
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31646

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 109217
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31647

<400> 109217
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109218
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31648

<400> 109218
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109219
<211> 1701
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hemagglutinin__InfluenzaA__ALE31649

<400> 109219
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109220
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31650

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109221
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31652

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucucccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109222
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31653

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109223
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31654

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109224
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31655

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109225
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALE31656

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109226
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31657

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ALE31659

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaaga agucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ALE31662

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aucgucaaga ccaucgccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<220>
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<210> 109233
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31666

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31667

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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hemagglutinin__InfluenzaA__ALE31681

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<400> 109250

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ALE31684

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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hemagglutinin__InfluenzaA__ALE31689

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31690

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109258
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109261
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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109262
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hemagglutinin__InfluenzaA__ALE31695

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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<210> 109263
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hemagglutinin__InfluenzaA__ALE31696

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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<210> 109264
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<220>
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hemagglutinin__InfluenzaA__ALE31697

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109265
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE31698

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109266
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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hemagglutinin__InfluenzaA__ALE31731

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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<210> 109299
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109300
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109301
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109302
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109304
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31737

<400> 109304

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<210> 109305
<211> 1701
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hemagglutinin__InfluenzaA__ALE31738

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

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<210> 109306
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hemagglutinin__InfluenzaA__ALE31739

<400> 109306
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109307
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31741

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109308
<211> 1701
<212> RNA

<213> Artificial Sequence

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcgucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109309
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109310
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<220>
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hemagglutinin__InfluenzaA__ALE31744

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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cgcugcaaca ucugcaucug a 1701

<210> 109311
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31745

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109312
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31747

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109313
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31748

<400> 109313
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 109315
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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31752

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109318
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hemagglutinin__InfluenzaA__ALE31753

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109319
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hemagglutinin__InfluenzaA__ALE31754

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109320
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31755

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aucgucaaga ccaucaccuc cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 109321
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31756

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31763

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ALE31765

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109332
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ALE31777

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<210> 109335
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31778

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109336
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109337
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31780

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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<400> 109369

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109380
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccgcu ccuccggccg caucaccguc 660

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE31842

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<400> 109394

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109400
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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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hemagglutinin__InfluenzaA__ALE31855

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ALE31859

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109407
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31860

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109408
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31861

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109413
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hemagglutinin__InfluenzaA__ALE31867

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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<210> 109414
<211> 1701
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hemagglutinin__InfluenzaA__ALE31868

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109415
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hemagglutinin__InfluenzaA__ALE31869

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<210> 109416
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31870

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109417
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109418
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31872

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109419
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31873

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109420
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109421
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31875

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109422
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31876

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109423
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALE31877

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<210> 109424
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31878

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<210> 109425
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31879

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109426
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109427
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109428
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hemagglutinin__InfluenzaA__ALE31882

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109429
<211> 1701
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hemagglutinin__InfluenzaA__ALE31888

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109430
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31889

<400> 109430

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<210> 109431
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31890

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109432
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31891

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109433
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31892

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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<210> 109434
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31893

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109435
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

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<210> 109436
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31895

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109437
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31896

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109438
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31897

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109439
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31898

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109440
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31899

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109441
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109443
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109447
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109464
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31926

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagggc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109465
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31927

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109466
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 109466

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109467
<211> 1701
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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31930

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109468
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31931

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109469
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31932

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109470
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31933

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109471
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALE31934

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

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<211> 1701
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hemagglutinin__InfluenzaA__ALE31935

<400> 109472
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109473
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31936

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcuaccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109474
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccu ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuccaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagc ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109475
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hemagglutinin__InfluenzaA__ALE31938

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109476
<211> 1701
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hemagglutinin__InfluenzaA__ALE31939

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109477
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<210> 109478
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31943

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109479
<211> 1701
<212> RNA
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<400> 109484

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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hemagglutinin__InfluenzaA__ALE31950

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hemagglutinin__InfluenzaA__ALE31951

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109488
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE31953

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uucgcccgcu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109489
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagcgcugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccacu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacgucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109490
<211> 1701
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hemagglutinin__InfluenzaA__ALE31955

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109491
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31956

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcaacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109492
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31957

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109493
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31958

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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<210> 109494
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31959

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109495
<211> 1701
<212> RNA
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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109496
<211> 1701
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hemagglutinin__InfluenzaA__ALE31961

<400> 109496
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

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<210> 109497
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109498
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109499
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hemagglutinin__InfluenzaA__ALE31964

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacua cgucccgac 360

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<210> 109500
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hemagglutinin__InfluenzaA__ALE31965

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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cgcugcaaca ucugcaucug a 1701

<210> 109501
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hemagglutinin__InfluenzaA__ALE31966

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109502
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31967

<400> 109502

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<210> 109503
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31968

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109504
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109506
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 109507
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109508
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<212> RNA
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hemagglutinin__InfluenzaA__ALE31973

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109509
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE31974

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109510
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31975

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109511
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31976

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109512
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109513
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

auccacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 109515
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hemagglutinin__InfluenzaA__ALE31980

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__ALE31981

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<210> 109517
<211> 1701
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hemagglutinin__InfluenzaA__ALE31995

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109518
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE31996

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109519
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31997

<400> 109519
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuuca ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109520
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE31998

<400> 109520

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109521
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE31999

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccucc acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109522
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32000

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gagaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacaucccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109523
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32001

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109524
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32002

<400> 109524
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109525
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32003

<400> 109525
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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ggcaugaugg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109526
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32004

<400> 109526
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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hemagglutinin__InfluenzaA__ALE32010

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<220>
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hemagglutinin__InfluenzaA__ALE32012

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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<210> 109536
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109537
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109538
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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109539
<211> 1701
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hemagglutinin__InfluenzaA__ALE32017

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109540
<211> 1701
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hemagglutinin__InfluenzaA__ALE32018

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 109541
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE32020

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109542
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32021

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109543
<211> 1701
<212> RNA
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacgg caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109544
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32023

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109545
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__ALE32024

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagcgcugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa cgacgagucc 420

uucaacuggg ccggcgucac ccagaacggc aaguccuccg ccugcauccg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccacucca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccacu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcacc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acuacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109546
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE32025

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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gacauccccu cccgcaucuc caucuacugg accaucguca aguccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109547
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32026

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109548
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32027

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109549
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALE32028

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109550
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32029

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109552
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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hemagglutinin__InfluenzaA__ALE32034

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109556
<211> 1701
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hemagglutinin__InfluenzaA__ALE32035

<400> 109556

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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109558
<211> 1701
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<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109559
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32038

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca agggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccucaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109560
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32039

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109561
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__ALE32040

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109562
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32041

<400> 109562
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109563
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32042

<400> 109563
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109564
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32043

<400> 109564
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109565
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32044

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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cgcugcaaca ucugcaucug a 1701

<210> 109566
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32045

<400> 109566
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109567
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<400> 109567

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<210> 109568
<211> 1701
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109569
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109570
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109571
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109572
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE32051

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109573
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE32052

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109574
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109575
<211> 1701
<212> RNA
<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgagucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109576
<211> 1701
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<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109577
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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cgcugcaaca ucugcaucug a 1701

<210> 109578
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32057

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109579
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32058

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109580
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32059

<400> 109580
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109581
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32060

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109582
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32061

<400> 109582
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109583
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucuacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109584
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hemagglutinin__InfluenzaA__ALE32063

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109585
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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109586
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109587
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALE32066

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109588
<211> 1701
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hemagglutinin__InfluenzaA__ALE32067

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109589
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE32068

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109590
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hemagglutinin__InfluenzaA__ALE32069

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcguc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109592
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aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagcgccaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109594
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109596
<211> 1701
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109597
<211> 1701
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<220>
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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggcccac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccgcu ccuccggccg caucaccguc 660

uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109602
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109604
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109605
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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hemagglutinin__InfluenzaA__ALE32085

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109608
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109609
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109610
<211> 1701
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<400> 109610

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<211> 1701
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hemagglutinin__InfluenzaA__ALE32090

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109612
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE32091

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109613
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE32092

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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<210> 109615
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

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hemagglutinin__InfluenzaA__ALE32095

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109618
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hemagglutinin__InfluenzaA__ALE32097

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109619
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hemagglutinin__InfluenzaA__ALE32099

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109620
<211> 1701
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hemagglutinin__InfluenzaA__ALE32100

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109621
<211> 1701
<212> RNA
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<220>

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109622
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109626
<211> 1701
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<220>
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hemagglutinin__InfluenzaA__ALE32106

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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<210> 109627
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<220>
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hemagglutinin__InfluenzaA__ALE32107

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109628
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALE32108

<400> 109628

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<210> 109629
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32109

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aucgucaaga ccaucaccuc cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcaugaagg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucaugugggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109630
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32110

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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cgcugcaaca ucugcaucug a 1701

<210> 109631
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32111

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc gaccagauca acggcaagcu caaccgccuc 1200

aucggcaaga ccaacgagaa guuccaccag aucgagaagg aguucuccga ggucgagggc 1260

cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109632
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32112

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109633
<211> 1701
<212> RNA
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gucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaugcg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccc 1020

gagaagcaga cccgcggcau cuucggcgcc aucgccggcu ucaucgagaa cggcugggag 1080

ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109634
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32114

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccggcaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109635
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALE32115

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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uccaccaagg gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

cgcugcaaca ucugcaucug a 1701

<210> 109636
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32116

<400> 109636
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109637
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALE32117

<400> 109637
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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<210> 109641
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucucccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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hemagglutinin__InfluenzaA__ALN39661

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<210> 109668
<211> 1701
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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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<210> 109670
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109671
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109673
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109674
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109675
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<210> 109676
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaccua ccccgcccuc 540

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109701
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hemagglutinin__InfluenzaA__ALN39735

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aucgucaaga ccaucaccga cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 109702
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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cggcggcaag 840

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<210> 109703
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccu cuccggcaag 840

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<210> 109704
<211> 1701
<212> RNA

<213> Artificial Sequence

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109705
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hemagglutinin__InfluenzaA__ALN39739

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109706
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__ALN39740

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109707
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALN39741

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109708
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ALN39742

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccccgac 360

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgac 960

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<210> 109709
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hemagglutinin__InfluenzaA__ALN39743

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg caaguccucc 480

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<210> 109710
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109711
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<210> 109712
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109713
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hemagglutinin__InfluenzaA__ALN39747

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109714
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hemagglutinin__InfluenzaA__ALN39748

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109715
<211> 1701
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hemagglutinin__InfluenzaA__ALN39749

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109716
<211> 1701
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<220>
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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cguccccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg ccgcuccucc 480

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

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auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

aacuucaucg cccccgagua cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcugguu ccucggcaac 240

cgcaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

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auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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hemagglutinin__InfluenzaA__ALT20080

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<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ALT66860

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcggccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucuuccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 109724
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AMA65393

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucaaccag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acucccccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109725
<211> 1701
<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuaccgca accuccucug gcucaccggc aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacaucggcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcggccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaccg gccuccgcaa caucccccucc 1020

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccaugggcgu cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109726
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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gucaccguca cccacuccgu caaccuccuc gaggacuccc acaacggcaa gcucugccgc 180

cucaagggca ucgccccccu ccagcucggc aacugcucca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuucuccaag gaguccuggu ccuacaucgc cgagaccccc 300

aacuccgaga acggcaccug cuaccccggc uacuucgccg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

cccaaccaca ccgucaccaa gggcgucacc gccuccugcu cccacaacgg caaguccucc 480

uucuaccgca accuccucug gcucaccggc aagaacggcc ucuaccccaa ccucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcgucca ccaccccucc 600

aacauccgcg accagcgcgc caucuaccac accgagaacg ccuacgucuc cgucgucucc 660

ucccacuacu cccgccgcuu cacccccgag aucgccaagc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc cucgagcccg gcgacaccau caucuucgag 780

gccaacggca accucaucgc ccccugguac gccuucgccc ucucccgcgg cuucggcucc 840

ggcaucauca ccuccaacgc cuccauggac gagugcgacg ccaagugcca gaccccccag 900

ggcgccauca acuccucccu ccccuuccag aacguccacc ccgucaccau cggcgagugc 960

cccaaguacg uccgcuccac caagcuccgc auggucaagg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcaacaac gagugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgagaagau cgacggcguc 1560

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<210> 109727
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAC43764

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gucacccacg ccaagaacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucau cgucccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

auggucuggc ucaccaagaa gggcuccaac uaccccgucg ccaagggcuc cuacaacaac 540

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cucaucgccc ccgaguacgg cuucaagauc uccaagcgcg gcuccuccgg caucaugaag 840

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accacccucc ccuuccacaa cguccacccc cucaccaucg gcgagugccc caaguacguc 960

aaguccgaga agcucguccu cgccaccggc cuccgcaacg ucccccagau cgaguccccgc 1020

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acccaguucg aggccgucgg caaggaguuc uccaaccucg agcgccgccu cgagaaccuc 1260

aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

aagguccgca ugcagcuccg cgacaacguc aaggagcucg gcaacggcug cuucgaguuc 1440

uaccacaagu gcgacgacga gugcaugaac uccgucaaga acggcaccua cgacuacccc 1500

aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

augggcgucu accagauccu cgccaucuac gccaccgucg ccggcucccu cucccucgcc 1620

aucaugaugg ccggcaucuc cuucuggaug ugcuccaacg gcucccucca guuccgcauc 1680

ugcaucuga 1689

<210> 109728
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAE07201

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaagaacuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacgccuacc ccaccaucaa gcgcuccuac 540

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gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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ucccuccagu gccgcaucug caucuga 1707

<210> 109729
<211> 1701
<212> RNA
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<220>

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<400> 109729

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 109730
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAH95824

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109731
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ07997

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cguccgcaac 1500

ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<210> 109732
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__BAJ39949

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aagcuccucg uccuccucaa gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109733
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ39950

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgc cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109734
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39951

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

uuccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109735
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39952

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109736
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39953

<400> 109736

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109737
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39954

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugccgca ucugcaucug a 1701

<210> 109738
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39955

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

aucuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cagugcaaga ucugcaucug a 1701

<210> 109739
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39956

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgc cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109740
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<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39957

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109741
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39958

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109742
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39959

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccuuc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109743
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39960

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109744
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39961

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109745
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39962

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgc cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaccug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccuuc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109746
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39963

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109747
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__BAJ39964

<400> 109747

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109748
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39965

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109749
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ39966

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109750
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ39967

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109751
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39968

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109752
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39969

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109753
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39970

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109754
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39971

<400> 109754

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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cagugccgca ucugcaucug a 1701

<210> 109755
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39972

<400> 109755
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccgag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109756
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39973

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109757
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39974

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109758
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39975

<400> 109758
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109759
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39976

<400> 109759
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacgagaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109760
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39977

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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cagugccgca ucugcaucug a 1701

<210> 109761
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39978

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgagcag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109762
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39979

<400> 109762
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca uggacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac aagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaaccgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109763
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39980

<400> 109763
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109764
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39981

<400> 109764
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

uccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaaggucaa gucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109765
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__BAJ39982

<400> 109765

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acacccuccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109766
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39983

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgc cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109767
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39984

<400> 109767
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac aacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccaccu cgagaagcgc 1260

aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109768
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39985

<400> 109768
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109769
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39987

<400> 109769
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc caaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109770
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ39988

<400> 109770
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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 109771
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hemagglutinin__InfluenzaA__BAJ39989

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaacgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109772
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<212> RNA
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<400> 109772

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109773
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109774
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109775
<211> 1701
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 109776
<211> 1701
<212> RNA

<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ39997

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<210> 109777
<211> 1701
<212> RNA
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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cagugccgca ucugcaucug a 1701

<210> 109778
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ39999

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109779
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hemagglutinin__InfluenzaA__BAJ40000

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109780
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hemagglutinin__InfluenzaA__BAJ40001

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109781
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hemagglutinin__InfluenzaA__BAJ40002

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109782
<211> 1701
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hemagglutinin__InfluenzaA__BAJ40003

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 109783
<211> 1701
<212> RNA
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<400> 109783

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 109784
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ40006

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<210> 109785
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ40007

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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<210> 109786
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40008

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccgacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca uggacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

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gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 109791
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<210> 109792
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<210> 109793
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<210> 109794
<211> 1701
<212> RNA

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109796
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109797
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

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hemagglutinin__InfluenzaA__BAJ40025

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<212> RNA
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hemagglutinin__InfluenzaA__BAJ40026

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109804
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<212> RNA
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hemagglutinin__InfluenzaA__BAJ40027

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgagacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<212> RNA
<213> Artificial Sequence

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109806
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40029

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 109807
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__BAJ40030

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

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<210> 109808
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40031

<400> 109808

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 109809
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40032

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

gaccucaagu ccacccagaa cgccaucgac gagaucacca acaaggucaa cuccgucauc 1200

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

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<210> 109810
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hemagglutinin__InfluenzaA__BAJ40033

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109811
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109812
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caaguucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109813
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<212> RNA
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hemagglutinin__InfluenzaA__BAJ40036

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggaccauc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109814
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 109815
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__BAJ40038

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<210> 109816
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__BAJ40039

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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<210> 109817
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40040

<400> 109817
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcuac 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109818
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40041

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109819
<211> 1701
<212> RNA
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<220>

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<400> 109819

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

ccccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accgccaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109820
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ40043

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109821
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40044

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcagaaggag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagaucaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109822
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40045

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109823
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40046

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 109824
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ40047

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 109825
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ40048

<400> 109825
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109826
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__BAJ40050

<400> 109826

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcucaaggag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109827
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAJ40051

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109828
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40052

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg ccgcgagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109829
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40053

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109830
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40054

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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<210> 109831
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40055

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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accuccaccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109832
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40056

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagcuccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgccac gccuucgcca uggagcgcaa cgccggcucc 840

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109833
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__BAJ40057

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109834
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40058

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109835
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40059

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109836
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40060

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109837
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__BAJ40061

<400> 109837

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109838
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40062

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109839
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAJ40063

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109840
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__BAJ40064

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgaca ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109841
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<212> RNA
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hemagglutinin__InfluenzaA__BAK23398

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgucaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucuucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucgu caagaaggac aacgccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgagu ucuucuggac cauccucaag uccaacgacg ucaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccgcggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 109842
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<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__BAK23400

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccacaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcaag 1020

ucccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<210> 109843
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23401

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaugguccu acaucgucga gaagaucaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaucaucaa gaaguccuac 540

cacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gaggagcaga cccgcaucua caagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcgucgagu ucuucuggac cauccucaag uccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

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<210> 109844
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23402

<400> 109844

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccaac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaucuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacacc cacccccuca ccaucggcga gugccccaag 960

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<210> 109845
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23403

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaucuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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uccucccucg cccucgccau cauggucgcc ggccucuucc ucuggaugug cuccaacggc 1680

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<210> 109846
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23404

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

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aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 109847
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23405

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguuccu caacgucccc gaguggucu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ucccuccagu gccgcaucug caucuga 1707

<210> 109848
<211> 1707
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__BAK23406

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucgu caagaaggac aacgccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcaucgagu ucuucuggac cauccucaag uccaacgacg ucaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaugugguccu acaucgucga gaagaucaac 300

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cucucccgca ucaaccgcuu cgagaagauc cagaucaucc ccaaguccuc cuggcccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucga gaaguccuac 540

cacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgcaucua caagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcgucgagu ucuucuggac cauccucaag uccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccc caacgucucc gaguggucu acaucgucga gaagaucaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccaguacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaaguccuac 540

cacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

gaggagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

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cgcgucgagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacuac aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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<210> 109851
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccaguacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaaguccuac 540

cacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

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cgcgucgagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccaguacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaaggac aacaccuacc ccaccaucaa gaaguccuac 540

cacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

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cgcgucgagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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hemagglutinin__InfluenzaA__BAK23413

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaugguccu acaucgucga gaagaucaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccaguacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaaggac aacaccuacc ccaccaucaa gaaguccuac 540

cacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

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hemagglutinin__InfluenzaA__BAK23414

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<211> 1698
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<400> 109855

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<210> 109856
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__BAO79716

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109857
<211> 1683
<212> RNA
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<220>
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Hemagglutinin__InfluenzaA__CAB95856

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aacgucaccu acaccggcac cucccgcgcc ugcuccggcu ccuucuaccg cuccaugcgc 480

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cgcgaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 109858
<211> 1683
<212> RNA
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<220>
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uccuccgccg ucaacggcac cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

acccucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaccugg 420

aacgucaccu acaccggcac cucccgcgcc ugcuccggcu ccuucuaccg cuccaugcgc 480

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cuccccuucc acaacaucuc caaguacgcc uucggcaccu gccccaagua cguccgcguc 960

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uucggcgcca ucgccggcuu caucgagggc ggcuggcccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcauggccg ccgaccgcga cuccacccag 1140

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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cgcgaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

gccuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 109859
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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccc caacgucucc gaguggguccu acaucgucga gaagaccaac 300

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcggccc cuccuucuac 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa ggaguccuac 540

cacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gaggagcaga cccgcaucua caagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcgucgagu ucuucuggac cauccucaag uccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc uccaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 109860
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hemagglutinin__InfluenzaA__CBW54817

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccc caacgucucc gaugguccu acaucgucga gaagaucaac 300

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cgcgucgagu ucuucuggac cauccucaag uccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacaccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 109861
<211> 1707
<212> RNA
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hemagglutinin__InfluenzaA__CBW54818

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccc caacgucucc gaugguccu acaucgucga gaagaccaac 300

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<210> 109862
<211> 1701
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__CCG47908

<400> 109862

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<210> 109863
<211> 1701
<212> RNA
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<220>
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cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

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<210> 109864
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__AAA43178

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uccuccauca ugcgcuccga cgcccccauc gacaccugca ucuccgagug caucaccccc 900

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109865
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<212> RNA

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cucgucaaga ccaucaccaa cgaccagauc gaggucacca acgccaccga gcucguccag 180

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<210> 109867
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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucaccggcug gcuccucggc 240

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aacuccgaga acggcgccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cuccccuucc agaacaucaa cucccgcacc gucggcgagu gcccccgcua cgucaagcag 960

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<212> RNA
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<210> 109871
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hemagglutinin__InfluenzaA__ACA28844/m1

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<212> RNA
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uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

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<210> 109873
<211> 1701
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<210> 109874
<211> 1701
<212> RNA
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accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 109876
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<212> RNA
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<210> 109877
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<212> RNA
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<210> 109878
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<212> RNA
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<210> 109879
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<212> RNA
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<210> 109886
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<210> 109887
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gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<210> 109896
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hemagglutinin__InfluenzaA__ABP51976/m1

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

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cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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<211> 1695
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaaguc cuccuucuuc 480

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cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

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gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

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<210> 109898
<211> 1695
<212> RNA
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cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

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<212> RNA
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cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accgucaccc acgcccagga cauccucgag aagaagcaca acggcaagcu cugcgaccuc 180

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<212> RNA
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<210> 109902
<211> 1695
<212> RNA

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hemagglutinin__InfluenzaA__ABW90130

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<210> 109903
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<212> RNA
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cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

acccgcggcc ucuucggcgc caucgccggc uucaucgagg gcggcuggca gggcaugguc 1080

gacggcuggu acggcuacca ccacuccaac gagcagggcu ccggcuacgc cgccgacaag 1140

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

uacgacaagg uccgccucca gcuccgcgac aacgccaagg agcucggcaa cggcugcuuc 1440

gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaucuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

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cgcaucugca ucuga 1695

<210> 109904
<211> 1695
<212> RNA
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

cacgaggccu cccucggcgu cuccuccgcc ugccccuacc agggcaagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

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gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaucuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

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accgucaccc acgcccagga cauccucgag aagaagcaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

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cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccucc 420

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cgcaacgucg ucuggcucau caagaagaac uccaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

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cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

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gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaucuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

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<210> 109906
<211> 1695
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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

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cgcaucugca ucuga 1695

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<212> RNA
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hemagglutinin__InfluenzaA__HB649491

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cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

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<210> 109908
<211> 1683
<212> RNA
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hemagglutinin__InfluenzaA__EPI439507

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<210> 109909
<211> 1701
<212> RNA
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<220>

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

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aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg cgccaacucc 480

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<210> 109910
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<220>
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hemagglutinin__InfluenzaA__EPI745532

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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cccgaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

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<210> 109911
<211> 1701
<212> RNA
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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgaca ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

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<212> RNA
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<210> 109917
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hemagglutinin__InfluenzaA__EPI240319

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<210> 109918
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hemagglutinin__InfluenzaA__EPI183134

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<210> 109919
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<212> RNA
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hemagglutinin__InfluenzaA__EPI368693

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gucaccguca cccacuccgu caacauccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccuccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109920
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI291788

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucaagcgcaa cuccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcgaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109921
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI482788

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucaagcgcaa cuccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcgaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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aucgagaacc ucaacaagaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109922
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI178946/m1

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

caccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg acaccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagaa gaaggagguc cucgucaucu ggggcaucca ccacccccc 600

accuccaccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagcgcuu caagcccgag aucgccgccc gccccaaggu ccgcaaccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

ggcaucaucg ucuccgacgc ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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auccaguccc gcggccucuu cggcgccauc gccggcuucc ucgagggcgg cuggaccggc 1080

augaucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagaagauga acacccaguu caccgccguc ggcaaggagu ucaaccagcu cgagaagcgc 1260

aucgaguccc ucaacaacaa ggucgacgac ggcuuccucg acaucuggac cuacaacgcc 1320

gagaugcucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgcccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccguc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109923
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI482791/m2

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagucccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

caccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg agaccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagaa gaaggagguc cucgucaucu ggggcaucca ccacccccc 600

accuccaccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagcgcuu caagcccgag aucgccgccc gccccaaggu ccgcaaccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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gagaugcucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccgcccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

cucguccucc ucgucucccu cggcgccguc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109924
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI291799

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucaacaag 540

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ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucaagcgcac cuccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109925
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI482799

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucaagcgcac cuccggcucc 840

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cagugccgca ucugcaucug a 1701

<210> 109926
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI291807

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagucccu cuucgccgcc uccuccuggu ccuacaucgu cgagaccccc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

caccucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc caacuccugg 420

cccaaccacg acaccaacaa gggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acaacaagaa gaaggagguc cucgucaucu ggggcaucca ccacccccc 600

accuccaccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguacu ccaagcgcuu caagcccgag aucgccgccc gccccaaggu ccgcgaccag 720

gccggccgca uggacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaga acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaacaa gggcgucacc gccgccugcc cccacuccgg caccaacucc 480

uucuaccgca accucgucug gcucguccag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaacgagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuacaag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

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uccuacauca acaacaagaa gaaggagguc cucgucaucu ggggcaucca ccacccccc 600

accuccaccg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

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gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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cucggcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc caucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gagggccgca ucaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acgacggcaa gcucugcaac 180

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auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

auggucgacg gcugguacgg cuaccaccac cagaacgagc agggcuccgg cuacgccgcc 1140

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg caaccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaagucc 480

uucuacaaga accucaucug gaucgccaag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaaggagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgc cccccgcuac gccuucgccc ucaagcgcaa cuccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggucau cgacggcguc 1560

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg uccccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu cuucaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaaggc cuccuccugg 420

cccgaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caagcccgag auggccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgcccccg gcgacaccau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cucggcggca ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgagcuccu ccucaccguc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaaccg cggcgucacc gccgccugcc ccuacgccgg cgccaacucc 480

uucuaccgca accucaucug gcucgucgag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaaggg caaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca accgcaaguu caagcccgag aucgccgccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc aucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaaccgcgg cuccggcucc 840

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ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

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aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109938
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<212> RNA

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hemagglutinin__InfluenzaA__EPI177400

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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<210> 109939
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<212> RNA
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hemagglutinin__InfluenzaA__ACT36512

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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<210> 109940
<211> 1704
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__AJE30344

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aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

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cccgccaacg accucugcua ccccggcacc cucaacgacu acgaggagcu caagcaccuc 360

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

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<210> 109941
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI178948

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

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cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

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<210> 109942
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI178949

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gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

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aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgccgg caccaacucc 480

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uccuacauca acaacaagga gaaggagguc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgccc ucaagcgcaa cuccggcucc 840

ggcaucauca ucuccgacac cuccguccac gacugcgaca ccaccugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacgac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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gucaccguca cccacuccgu caaccuccuc gagaacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccu cgccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccaaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagaag uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg agaccaacaa gggcgucacc gccgccugcc cccacgccgg caccaacucc 480

uucuacaaga accucaucug gcucgucaag aaggagaacu ccuaccccaa gaucaacauc 540

uccuacacca acaaccgcgg caaggagguc cucguccucu gggccaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccaacu ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcauc 1560

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hemagglutinin__InfluenzaA__ABU80400

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gucaccguca cccacuccgu caaccuccuc gaggaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

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aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacguca acaacaagga gaaggagguc cucguccucu ggggcaucca ccacccccc 600

accuccaccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

uccaaguaca acaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcggccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaccau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca ugaagcgcgg cuccggcucc 840

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uacgacuacc ccaaguacuc cgaggagucc aagcucaacc gcgaggagau cgacggcguc 1560

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cucaagggca ucgccccccu ccagcucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgacccccu ccuccccguc cgcuccuggu ccuacaucgu cgagaccccc 300

aacuccgaga acggcaucug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagga guccuccugg 420

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ggccgcauga acuacuacug gacccuccuc aagcccggcg acaccaucau cuucgaggcc 780

aacggcaacc ucaucgcccc cauguacgcc uucgcccucu cccgcggcuu cggcuccggc 840

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gacuacccca aguacuccga ggaguccaag cucaaccgcg agaaggucga cggcgucaag 1560

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<213> Artificial Sequence

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hemagglutinin__InfluenzaA__CAZ65588

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

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<210> 109947
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI697744

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

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ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

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<210> 109948
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI768525

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cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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<210> 109949
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<212> RNA
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hemagglutinin__InfluenzaA__EPI726930

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

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ucccgcuacu ccaagaaguu caagcccgag aucgccaccc gccccaaggu ccgcgaccag 720

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<210> 109950
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<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgagaagau cgacggcguc 1560

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<212> RNA
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hemagglutinin__InfluenzaA__EPI541966

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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uccuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accaccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcacc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucacca uggagcgcaa cgccggcucc 840

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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

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hemagglutinin__InfluenzaA__EPI291877

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gucaccguca cccacuccgu caacauccuc gagaacaagc acgacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuucgccgcc uccuccuggu ccuacaucgu cgagaccccc 300

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accuccaucg accagcagac ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

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<210> 109955
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hemagglutinin__InfluenzaA__ABR29595

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<210> 109956
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI291885

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<210> 109957
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI176515

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cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

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cucguccucg ucgucucccu cggcgccauc uccuucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 109958
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<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI189182

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcggccag 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

aaccucuacg agaagguccg cucccagcuc aagaacaacg ccaaggagau cggcaacggc 1440

ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109959
<211> 1701
<212> RNA
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<220>
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gucaccguca cccacuccgu caaccuccuc gaggacaagc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gauccucggc 240

aaccccgagu gcgagucccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

uccuccgaca acggcaccug cuaccccggc gacuucaucg acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acuccaacaa gggcgucacc gccgccugcc cccacgccgg cgccaagucc 480

uucuacaaga accucaucug gcucgucaag aagggcaacu ccuaccccaa gcucuccaag 540

uccuacauca acgacaaggg caaggagguc cucguccucu ggggcaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu ccaagaaguu caagcccgag aucgccaucc gccccaaggu ccgcgaccgc 720

gagggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

gccaccggca accucgucgu cccccgcuac gccuucgcca uggagcgcaa cgccggcucc 840

ggcaucauca ucuccgacac ccccguccac gacugcaaca ccaccugcca gacccccaag 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccaucaccau cggcaagugc 960

cccaaguacg ucaaguccac caagcuccgc cucgccaccg gccuccgcaa cgucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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gagcuccucg uccuccucga gaacgagcgc acccucgacu accacgacuc caacgucaag 1380

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ugcuucgagu ucuaccacaa gugcgacaac accugcaugg aguccgucaa gaacggcacc 1500

uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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<210> 109960
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI377499

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

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aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109961
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI346916

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ugcaucggcu accacgccaa caacuccacc gacaccgucg acaccguccu cgagaagaac 120

gucaccguca cccacuccgu caaccuccuc gagaaccgcc acaacggcaa gcucugcaag 180

cuccgcggcg ucgccccccu ccaccucggc aagugcaaca ucgccggcug gcuccucggc 240

aaccccgagu gcgaguccccu cuccaccgcc uccuccuggu ccuacaucgu cgagaccucc 300

aacuccgaca acggcaccug cuaccccggc gacuucauca acuacgagga gcuccgcgag 360

cagcucuccu ccgucuccuc cuucgagcgc uucgagaucu uccccaagac cuccuccugg 420

cccaaccacg acaccaaccg cggcgucacc gccgccugcc cccacgacgg caccaacucc 480

uucuaccgca accucaucug gcucgucaag aagggcaacu ccuaccccaa gaucaacaag 540

uccuacauca acaacaagga gaaggagauc cucguccucu gggccaucca ccaccccucc 600

accuccgccg accagcaguc ccucuaccag aacgccgacg ccuacgucuu cgucggcucc 660

ucccgcuacu cccgcaaguu cgagcccgag gucgccaccc gccccaaggu ccgcgaccag 720

gccggccgca ugaacuacua cuggacccuc gucgagcccg gcgacaagau caccuucgag 780

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ggcaucauca ucuccgacac cuccguccac gacugcgaca ccaacugcca gacccccaac 900

ggcgccauca acaccucccu ccccuuccag aacauccacc ccgucaccau cggcgagugc 960

cccaaguacg ucaaguccac caagcuccgc auggccaccg gccuccgcaa caucccccucc 1020

auccaguccc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggaccggc 1080

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uacgacuacc ccaaguacuc cgaggaggcc aagcucaacc gcgaggagau cgacggcguc 1560

aagcucgagu ccacccgcau cuaccagauc cucgccaucu acuccaccgu cgccuccucc 1620

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cagugccgca ucugcaucug a 1701

<210> 109962
<211> 1689
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACV49600

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ggcuaccacg ccaacaacuc caccgagaag gucgacacca uccucgagcg caacgucacc 120

gucacccacg ccaaggacau ccucgagaag acccacaacg gcaagcucug caagcucaac 180

ggcauccccc cccucgagcu cggcgacugc uccaucgccg gcuggcuccu cggcaacccc 240

gagugcgacc gccuccucuc cgucccccgag ugguccuaca ucauggagaa ggagaacccc 300

cgcgacggcc ucugcuaccc cggcuccuuc aacgacuacg aggagcucaa gcaccuccuc 360

uccuccguca agcacuucga gaaggucaag auccucccca aggaccgcug gacccagcac 420

accaccaccg gcggcucccg cgccugcgcc gucuccggca accccuccuu cuuccgcaac 480

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aacaagaaga uggaggacgg cuuccucgac gucuggaccu acaacgccga gcuccucguc 1320

cucauggaga acgagcgcac ccucgacuuc cacgacucca acgucaagaa ccucuacgac 1380

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aaguacgagg aggaguccaa gcucaaccgc aacgagauca agggcgucaa gcucuccucc 1560

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<210> 109963
<211> 1701
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from hemagglutinin__InfluenzaA__BAF48361

<400> 109963

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<210> 109964
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI507594

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109965
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI461953

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

aacaagcucu ucgagaagac caagaagcag cuccgcgaga acgccgagga caugggcaac 1440

ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109966
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hemagglutinin__InfluenzaA__EPI461953/m1

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ggcaacgaca acuccaccgc cacccucugc cucggccacc acgccguccc caacggcacc 120

aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg cgagaacugc 240

acccucaucg acgcccuccu cggcgacccc cagugcgacg gcuuccagaa caagaagugg 300

gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacuggg ccggcgucac ccagaacggc accuccuccg ccugcaagcg cggcuccaac 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuucaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

cccgucaccg acaaggacca gaucuuccuc uacgcccagu ccuccggccg caucaccguc 660

uccaccaagc gcucccagca ggccgucauc cccaacaucg gcuaccgccc ccgcauccgc 720

aacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ugcccccgcu acgucaagca guccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ucgagggccg cggccaggcc 1140

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109967
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

uacgccuccc uccgcucccu cgucgccucc uccggcaccc ucgaguucaa caacgagucc 420

uucaacugga ccggcgucac ccagaacggc accuccuccg ccugcauccg cggcuccucc 480

uccuccuucu ucucccgccu caacuggcuc acccaccuca acuacaagua ccccgcccuc 540

aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ggcauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acaacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

gucgagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109968
<211> 1701
<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aacgucacca ugcccaacaa cgagcaguuc gacaagcucu acaucugggg cguccaccac 600

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ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggccg cggccaggcc 1140

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uuccuccucu gcgucgcccu ccucggcuuc aucauguggg ccugccagaa gggcaacauc 1680

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<210> 109969
<211> 1701
<212> RNA
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hemagglutinin__InfluenzaA__EPI551882

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gacauccccu cccgcaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

ugcccccgcu acgucaagca cuccacccuc aagcucgcca ccggcaugcg caacguccccc 1020

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<210> 109970
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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<400> 109970

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 109971
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 109972
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI642513

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

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<210> 109973
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI293965

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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aacggcucca uccccaacga caagcccuuc cagaacguca acaagaucac cuacggcgcc 960

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ggcauggucg acggcuggua cggcuuccgc caccagaacu ccgagggcac cggccaggcc 1140

gccgaccuca aguccaccca ggccgccauc aaccagauca ccggcaagcu caaccgcguc 1200

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cgcauccagg accucgagaa guacgucgag gacaccaaga ucgaccucug guccuacaac 1320

gccgagcucc ucgucgcccu cgagaaccag cacaccaucg accucaccga cuccgagaug 1380

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ggcugcuuca agaucuacca caagugcgac aacgccugca ucggcuccau ccgcaacggc 1500

accuacgacc acgacaucua ccgcaacgag gcccucaaca accgcuucca gaucaagggc 1560

guccagcuca aguccggcua caaggacugg auccucugga ucuccuucgc caucuccugc 1620

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<210> 109974
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<212> RNA

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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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uucaacugga ccggcgucgc ccaggacggc uccuccuacg ccugccgccg cggcuccguc 480

aacuccuucu ucucccgccu caacuggcuc uacaaccuca acuacaagua ccccgagcag 540

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uccaccaagc gcucccagca gaccgucauc cccaacaucg gcucccgccc cuggguccgc 720

ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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<210> 109975
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ggcuccgaca acuccauggc cacccucugc cucggccacc acgccguccc caacggcacc 120

cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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accuacgacc acgacaucua ccgcaacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109976
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cucgucaaga ccaucaccga cgaccagauc gaggucacca acgccaccga gcucguccag 180

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ggcgucuccu ccaucaucuc caucuacugg accaucguca agcccggcga cauccuccuc 780

aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

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ugcccccgcu acgucaagca gaacacccuc aagcucgcca ccggcaugcg caacgucccc 1020

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accuacgacc acgacaucua ccgcaacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109977
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

aacuccucca ucggcgagau cugcgacucc ccccaccaga uccucgacgg caagaacugc 240

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uccaccaagc gcucccagca ggccgucauc cccaacaucg gcucccgccc ccgcauccgc 720

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagaucca guccggcaag 840

uccuccauca ugcgcuccga cgcccccauc ggcaagugca aguccgagug caucaccccc 900

aacggcucca uccccaacga caagcccuuc cagaacguca accgcaucac cuacggcgcc 960

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accuacgacc acgacgucua ccgcgacgag gcccucaaca accgcuucca gaucaagggc 1560

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<210> 109978
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI563212

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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aucaacucca ccggcaaccu caucgccccc cgcggcuacu ucaagauccg cuccggcaag 840

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<210> 109979
<211> 1701
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hemagglutinin__InfluenzaA__EPI553999

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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gaccucuucg ucgagcgcuc caaggccuac uccaacugcu accccuacga cgucccgac 360

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<210> 109980
<211> 1701
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI551570

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109981
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI629738

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109988
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<210> 109996
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<212> RNA
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aucgucaaga ccaucaccaa cgaccgcauc gaggucacca acgccaccga gcucguccag 180

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<212> RNA
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<212> RNA
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hemagglutinin__InfluenzaA__EPI500771

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

ccccucugcg acgaguucac caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaggacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugcuccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accgcgagga ccuccucauc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaaccg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augcgcuccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

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aagaaccucu acgacaaggu ccgccuccag cucaaggaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcaac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgucc ucgccaucau gauggccggc cucucccucu ggaugugcuc caacggcucc 1680

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<212> RNA
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<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagaucgag 1020

acccgcggcc ucuucggcgc caucgccggc uucaucgagg gcggcuggca gggcaugguc 1080

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

uacgacaagg uccgccucca gcuccgcgac aacgccaagg agcucggcaa cggcugcuuc 1440

gaguucuacc accgcugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaccuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau cgacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cgcaucaucc ccaaggacuc cuggcccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugcuccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcuccu caagaaggac aacgccuacc ccaucaucaa gaaguccuac 540

aacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augcgcuccg aggucgagua cggcaacugc uccacccgcu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagaucgag 1020

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cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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ucccuccagu gccgcaucug caucuga 1707

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<211> 1707
<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau cgacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cgcaucaucc ccaaggacuc cuggcccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugcuccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcuccu caagaaggac aacgccuacc ccaucaucaa gaaguccuac 540

aacaacacca acaaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuacg ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augcgcuccg aggucgagua cggcaacugc uccacccgcu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagaucgag 1020

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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uccucccucg uccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgucaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cuggcccucc 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc augugggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaaccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucacccc ccgcaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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aacaacacca accaggagga ccuccucguc auguggggca uccaccaccc caacgacgcc 600

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<212> RNA
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<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gagugguccu acaucgucga gaaggccucc 300

cccgccaacg gccucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucaaccgca ucacccaccu caagaagauc aagaucaucc ccaaguccua cugguccaac 420

cacgaggccu ccuccggcgu cuccgccgcc ugcuccuaca ugggcgagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc cccccaucaa ggucaacuac 540

accaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

gccgagcaga uccagaucua ccagaaccuc aucacccaca ucuccgucgg caccuccacc 660

cucaaccagc gccucauccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacu ccaucaacuu cgacuccaac 780

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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uccaacguca agaaccucua cgagaagguc cgccuccagc uccgcgacaa cgccaaggag 1440

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cgcaacggca ccuacgacua cucccaguac uccgaggagg cccgccucuc ccgcgaggag 1560

aucaacggcg ucaagcucga guccaugguc accuaccaga uccucuccau cuacuccacc 1620

gucgccuccu cccucgcccu cgccaucaug gucgccggcc ucucccucug gaugugcucc 1680

aacggcuccc uccagugccg caucugcauc uga 1713

<210> 110021
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI284473

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaguggguccu acaucgucga gaaggccucc 300

cccgccaacg gccucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucaaccgca ucacccaccu caagaagauc aagaucaucc ccaaguccua cugguccaac 420

cacgaggccu ccuccggcgu cuccgccgcc ugcuccuaca ugggcgagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc cccccaucaa ggucaacuac 540

accaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacaacgag 600

gccgagcaga uccagaucua ccagaaccuc aucacccaca ucuccgucgg caccuccacc 660

cucaaccagc gccucauccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacu ccaucaacuu cgacuccaac 780

ggcaacuuca ucgcccccga guacgccuac aucgucaaga agggcgacuc cgccaucaug 840

aaguccgagc ucgaguacgg caacugcaac accaagugcc agacccccau gggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acgccccccca gcgcgagcgc 1020

gagggcggcc gccgccgcaa gcgcggccuc uucggcgcca ucgccggcuu caucgagggc 1080

ggcuggcagg gcauggucga cggcugguac ggcuaccacc acuccaacga gcagggcucc 1140

ggcuacgccg ccgacaagga guccacccag aaggccaucg acggcaucac caacaagguc 1200

aacuccauca ucgacaagau gaacacccag uucgaggccg ucggccgcga guucaacaac 1260

cucgagcgcc gcaucgagaa ccucaacaag aagauggagg acggcuuccu cgacgucugg 1320

accuacaacg ccgagcuccu cguccucaug gagaacgagc gcacccucga cuuccacgac 1380

uccaacguca agaaccucua cgagaagguc cgccuccagc uccgcgacaa cgccaaggag 1440

cucggcaacg gcugcuucga guucuaccac aagugcgaca acgagugcau ggaguccguc 1500

cgcaacggca ccuacgacua cucccaguac uccgaggagg cccgccucuc ccgcgaggag 1560

aucaacggcg ucaagcucga guccaugguc accuaccaga uccucuccau cuacuccacc 1620

gucgccuccu cccucgcccu cgccaucaug gucgccggcc ucucccucug gaugugcucc 1680

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<210> 110022
<211> 1710
<212> RNA
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hemagglutinin__InfluenzaA__ACO07033

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaguggguccu acaucgucga gaaggccucc 300

cccgccaacg gccucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccaccu caagaagauc aagaucaucc ccaaguccua cugguccaac 420

cacgaggccu ccuccggcgu cuccgccgcc ugcuccuacc ucggcgagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc cccccaucaa ggucaacuac 540

accaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

aaggagcaga uccgcaucua ccagaacccc aacaccucca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcccca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacu ccaucaacuu cgacuccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucgcca agaagggcga cuccgucauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacgcccc ccagcgcgag 1020

ggcggccgcc gccgcaagcg cggccucuuc ggcgccaucg ccggcuucau cgagggcggc 1080

uggcagggca uggucgacgg cugguacggc uaccaccacu ccaacgagca gggcuccggc 1140

uacgccgccg acaaggaguc cacccagaag gccaucgacg gcaucaccaa caaggucaac 1200

uccaucaucg acaagaugaa cacccaguuc gagaucgucg gccgcgaguu caacaaccuc 1260

gagcgccgca ucgagaaccu caacaagaag auggaggacg gcuuccucga cgucuggacc 1320

uacaacgccg agcuccucgu ccucauggag aacgagcgca cccucgacuu ccacgacucc 1380

aacgucaaga accucuacga gaagguccgc cuccagcucc gcgacaacgc caaggagcuc 1440

ggcaacggcu gcuucgaguu cuaccacaag ugcgacaacg agugcaugga guccguccgc 1500

aacggcaccu acgacuaccc ccaguacucc gaggaggccc gccucucccg cgaggagauc 1560

uccggcguca agauggaguc cauggucacc uaccagaucc ucuccaucua cuccaccguc 1620

gccuccuccc ucgcccucgc caucaugguc gccggccucu cccucuggau gugcuccaac 1680

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<210> 110023
<211> 1695
<212> RNA
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<220>
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hemagglutinin__InfluenzaA__EPI174803

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucucc gaguggguccu acaucgucga gaaggccucc 300

cccgccaacg gccucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccaccu caagaagauc aagaucaucc ccaaguccua cugguccaac 420

cacgaggccu ccuccggcgu cuccgccgcc ugcuccuacc ucggcgagcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc cccccaucaa ggucaacuac 540

accaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

aaggagcaga uccgcaucua ccagaacccc aacaccucca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcccca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacu ccaucaacuu cgacuccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucgcca agaagggcga cuccgucauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacgcccc ccagaccgag 1020

acccgcggcc ucuucggcgc caucgccggc uucaucgagg gcggcuggca gggcaugguc 1080

gacggcuggu acggcuacca ccacuccaac gagcagggcu ccggcuacgc cgccgacaag 1140

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aaccucaaca agaagaugga ggacggcuuc cucgacgucu ggaccuacaa cgccgagcuc 1320

cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

uacgagaagg uccgccucca gcuccgcgac aacgccaagg agcucggcaa cggcugcuuc 1440

gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc ucccgcgagg agaucuccgg cgucaagaug 1560

gaguccaugg ucaccuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

cucgccauca uggucgccgg ccucucccuc uggaugugcu ccaacggcuc ccuccagugc 1680

cgcaucugca ucuga 1695

<210> 110024
<211> 1704
<212> RNA
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hemagglutinin__InfluenzaA__AGZ62382

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgccaacg gccucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cgcaucaucc ccaaggacuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacaccuacc ccaccaucaa gaaguccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagcgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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cgcaaccucu acgacaaggu ccgccuccag cucaaggaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcaac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccucc gccgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caucuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgucc ucgccaucau gauggccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 110025
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABG67978/m

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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<210> 110026
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI827075

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

ccccucugcg acgaguucac caacgucccc gaguggucu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu cccucggcgu cuccgccgcc ugcuccuacc agggcaacuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accgcgagga ccuccucauc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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uacgacaagg uccgccucca gcucaaggac aacgccaagg agcucggcaa cggcugcuuc 1440

gaguucuacc acaagugcaa caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

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cgcaucugca ucuga 1695

<210> 110027
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

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cccaugugcg acgaguuccu caacgucccc gaguggucu acaucgucga gaagaucaac 300

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uacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

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gccgagcaga uccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag uccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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aucaucaaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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<210> 110028
<211> 1692
<212> RNA

<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI827077

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

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cacgaggccu ccggcgucuc cuccgccugc cccuaccagg gccgcuccuc cuucuuccgc 480

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gagcagaccc gccucuacca gaaccccacc accuacaucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

auggaguucu ucuggaccau ccucaagucc aacgacgcca ucaacuucga guccaacggc 780

aacuucaucg cccccgagaa cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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guccucaugg agaacgagcg cacccucgac uuccacgacu ccaacgucaa gaaccucuac 1380

gacaaggucc gccuccagcu ccgcgacaac gccaaggagc ucggcaacgg cugcuucgag 1440

uucuaccacc gcugcgacaa cgagugcaug gaguccgucc gcaacggcac cuacgacuac 1500

ccccaguacu ccgaggaggc ccgccucaag cgcgaggaga ucuccggcgu caagcucgag 1560

uccaucggca ccuaccagau ccucuccauc uacuccaccg ucgccuccuc ccucgcccuc 1620

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcaaccuc 180

aacggcguca agccccucau ccucgaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acaaguuccu caacgucucc gaguggguccu acaucgucga gaaggccggc 300

cccgccaacg gccucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc gagaucaucc ccaagaacca cugguccaac 420

cacaacaccu ccggcgucuc cuccgccugc uccuaccucg agaaccccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacaac accuacccca ccaucaaggu caacuacacc 540

aacgccaacc agaaggaccu ccucguccuc uggggcaucc accaccccaa caacgaggcc 600

gagcagaaga ugaucuacca gaacuccaac accuacgucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcuccaagg ucaacggcca guccggccgc 720

aucgacuucu ucuggaccau ccucaagccc aacgacacca ucaacuucga cuccaacggc 780

aacuucaucg cccccaagua cgccuacaag aucgucaaga agggcgacuc cgccaucaug 840

aaguccgagc ucaaguacga caacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca accgccucgu ccucgccacc ggccuccgca acgcccccca gaucgagggc 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

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accuacgacu acccccagua cuccgaggag gcccgccuca accgcgagga gaucuccggc 1560

gucaagcucg aguccaccgu caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgucc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccucc 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ccaaccacuu cgagaagauc cagaucaucc cccccuccuc cugguccaac 420

cacgacgccu ccuccggcgu cuccuccgcc ugccccuacc acggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc cgagaucgcc acccgcccca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacacccc ccagcgcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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ucccuccagu gccgcaucug caucuga 1707

<210> 110031
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<212> RNA
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<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccucc 300

cccgccaacg accucugcua ccccggcgac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ccaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccaac 420

cacgacgccu ccuccggcgu cuccuccgcc ugccccuacc acggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac uccgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc cgagaucgcc acccgcccca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caugggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaaccgcga ggagaucucc 1560

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<210> 110032
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<212> RNA
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaaguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gaagggcuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgag 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccaucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca agaucaacgg ccaguccggc 720

cgcaucgacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg aggucgagua cggcaacugc aacacccgcu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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<212> RNA
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hemagglutinin__InfluenzaA__AFM78567

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gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

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<212> RNA
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cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

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<211> 1707
<212> RNA
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<400> 110035

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<210> 110036
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI341633

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguguccu acaucgucga gaaggccaac 300

cccaccaacg accucugcua ccccggcucc uucaacgacu acgaggagcu caagcaccuc 360

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aucaacuccu ccaugcccuu ccacaacauc caccccauca ccaucggcga gugccccaag 960

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aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucuc caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

aacgccgagc uccucguccu cauggagaac gagcgcaccc ucgacuucca cgacuccaac 1380

gucaagaacc ucuacgacaa gguccgccuc cagcuccgcg acaacgccaa ggagcucggc 1440

aacggcugcu ucgaguucua ccacaagugc gacaacgagu gcauggaguc cauccgcaac 1500

ggcaccuaca acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

uccucccucg cccucgccau caugaucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 110037
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<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABD95991

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaaccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

ucccuccagu gccgcaucug caucuga 1707

<210> 110038
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGN69453

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccgccggcgu cuccuccgcc ugccccuacc agggcauguc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacucc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgagu ucuucuggac cauccucaag cccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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ggcaccuacg acuacccccа guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

ggcgucaagc ucgaguccau cggcaccuac cagauccucu ccaucuacuc caccgucgcc 1620

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ucccuccagu gccgcaucug caucuga 1707

<210> 110039
<211> 1707
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccgccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacucc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcaucgagu ucuucuggac cauccucaag cccaacgaca ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

gccgccgaca aggaguccac ccagaaggcc aucgacggcg ucaccaacaa ggucaacucc 1200

aucaucgaca agaugaacac ccaguucgag gccgucggcc gcgaguucaa caaccucgag 1260

cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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ggcaccuacg acuaccccca guacuccgag gaggcccgcc ucaagcgcga ggagaucucc 1560

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<210> 110040
<211> 1707
<212> RNA
<213> Artificial Sequence

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hemagglutinin__InfluenzaA__ABD73284

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccgccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agcucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccucccgccu cguccucgcc accggccucc gcaacucccc ccagggcgag 1020

cgccgccgca agaagcgcgg ccucuucggc gccaucgccg gcuucaucga gggcggcugg 1080

cagggcaugg ucgacggcug guacggcuac caccacucca acgagcaggg cuccggcuac 1140

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cgccgcaucg agaaccucaa caagaagaug gaggacggcu uccucgacgu cuggaccuac 1320

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uccucccucg cccucgccau cauggucgcc ggccucuccc ucuggaugug cuccaacggc 1680

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<210> 110041
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ABF93440

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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguuccu caacgucccc gaguggguccu acaucgucga gaagaucaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

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cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggccgcuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaaggac aacgccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucguc cucuggggca uccaccaccc caacgacgcc 600

gccgagcaga cccgccucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggagu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga gaacgccuac aagaucguca agaagggcga cuccaccauc 840

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

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gaguucuacc accgcugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaccuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

cucgccauca uggucgccgg ccucucccuc uggaugugcu ccaacggcuc ccuccagugc 1680

cgcaucugca ucuga 1695

<210> 110042
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AKC45369

<400> 110042

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accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagacc cucaucaucc ccaaguccuc cuggcccaac 420

cacaccuccu ccggcgucuc cgccgccugc cccuaccagg gcacccccuc cuucuuccgc 480

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gagcagacca accucuacaa gaaccccacc accuacgucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgucccccaa gaucgccacc cgcucccagg ucaacggcca gcgcggccgc 720

auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

aacuucaucg cccccgagua cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

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aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

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<210> 110043
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AJS18479

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accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

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aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

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accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

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<210> 110044
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI691378

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accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

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cacgagaccu cccucggcgu cuccgccgcc ugccccuacc agggcguccc cuccuucuuc 480

cgcaacgucg ucuggcucac caagaagaac gacgccuacc ccaccaucaa gauguccuac 540

aacaacacca accgcgagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcaga ccaaccucua caagaacccc accaccuacg ucuccgucgg caccuccacc 660

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cgcauggacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agauggagua cggccacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgaccgcg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

cgcaucgaga accucaacaa gaagauggag gacggcuucc ucgacgucug gaccuacaac 1320

gccgagcucc ucguccucau ggagaacgag cgcacccucg acuuccacga cuccaacguc 1380

aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau cgucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 110045
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI533583

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cucaucaucc ccaaguccuc cuggaccaac 420

cacgagaccu cccucggcgu cuccgccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac gacgccuacc ccaccaucaa gaucuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggcg uccaccacuc caacaacgcc 600

gccgagcaga ccaaccucua caagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcuccc aggucaacgg ccagcgcggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agauggagua cggccacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

aagcgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacaagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau cgucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 110046
<211> 1701
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AKS48023

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagacc cucaucaucc ccaaguccuc cuggcccaac 420

cacaccuccu ccggcgucuc cgccgccugc cccuaccagg gcaugcccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacgac gccuacccca ccaucaagau guccuacaac 540

aacaccuacc gcgaggaccu ccucauccuc uggggcaucc accacuccaa caacgccgcc 600

gagcagacca accucuacaa gaaccccacc accuacgucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgagcccaa gaucgccacc cgcucccagg ucaacggcca gcgcggccgc 720

auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

aacuucaucg cccccgagua cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgaga uggaguacgg ccacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca acaagcucgu ccucgccacc ggccuccgca acucccccu ccgcgagcgc 1020

cgccgcaagc gcggccucuu cggcgccauc gccggcuuca ucgagggcgg cuggcagggc 1080

auggucgacg gcugguacgg cuaccaccac uccaacgagc agggcuccgg cuacgccgcc 1140

gaccgcgagu ccacccagaa ggccaucgac ggcgucacca acaaggucaa cuccaucauc 1200

gacaagauga acacccaguu cgaggccguc ggccgcgagu ucaacaaccu cgagcgccgc 1260

aucgagaacc ucaacaagaa gauggaggac ggcuuccucg acgucuggac cuacaacgcc 1320

gagcuccucg uccucaugga gaacgagcgc acccucgacu uccacgacuc caacgucaag 1380

aaccucuacg acaagguccg ccuccagcuc cgcgacaacg ccaaggagcu cggcaacggc 1440

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uacgacuacc cccaguacuc cgaggaggcc cgccucaagc gcgaggagau cuccggcguc 1560

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cucgcccucg ccaucaucgu cgccggccuc ucccucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 110047
<211> 1701
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI587621

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggccgccu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagacc cucaucaucc ccaaguccuc cuggcccaac 420

cacaccuccu ccggcgucuc cgccgccugc cccuaccagg gcaugcccuc cuucuuccgc 480

aacgucgucu ggcucaccaa gaagaacgac gccuacccca ccaucaagau guccuacaac 540

aacaccuacc gcgaggaccu ccucauccuc uggggcaucc accacuccaa caacgccgcc 600

gagcagacca accucuacaa gaaccccacc accuacgucu ccgucggcac cuccacccuc 660

aaccagcgcc ucgagcccaa gaucgccacc cgcucccagg ucaacggcca gcgcggccgc 720

auggacuucu ucuggaccau ccucaagccc aacgacgcca uccacuucga guccaacggc 780

aacuucaucg cccccgagua cgccuacaag aucgucaaga agggcgacuc caccaucaug 840

aaguccgaga uggaguacgg ccacugcaac accaagugcc agacccccau cggcgccauc 900

aacuccucca ugcccuucca caacauccac ccccucacca ucggcgagug ccccaaguac 960

gucaagucca acaagcucgu ccucgccacc ggccuccgca acucccccu ccgcgagcgc 1020

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ugcuucgagu ucuaccacaa gugcgacaac gagugcaugg aguccguccg caacggcacc 1500

uacgacuacc cccaguacuc cgaggaggcc cgccucaagc gcgaggagau cuccggcguc 1560

aagcucgagu ccaucggcac cuaccagauc cucuccaucu acuccaccgu cgccuccucc 1620

cucgcccucg ccaucaucgu cgccggccuc ucccucugga ugugcuccaa cggcucccuc 1680

cagugccgca ucugcaucug a 1701

<210> 110048
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AJE30333

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aucggcuacc acgccaacaa cuccaccaag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

aacggcguca agccccucau ccucaaggac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau ccgcgucccc gaguggguccu acaucgucga gcgcgccaac 300

cccgccaacg accucugcua ccccggcacc cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagacc cucaucaucc cccgcuccuc cuggcccaac 420

cacgagaccu cccucggcgu cuccgccgcc ugccccuacc agggcgccuc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac gacgccuacc ccaccaucaa gaucuccuac 540

aacaacacca accgcgagga ccuccucauc cucuggggca uccaccacuc caacaacgcc 600

gccgagcaga ccaaccucua caagaacccc gacaccuacg ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcuccc aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccauccacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccaccauc 840

augaaguccg agauggagua cggccacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

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ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu accccaagua cuccgaggag gccauccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau cgucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 110049
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI459855

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accgucaccc acuccgucga gcuccucgag aaccagaagg agaagcgcuu cugcaagauc 180

augaacaagg ccccccucga ccucaaggac ugcaccaucg agggcuggau ccucggcaac 240

cccaagugcg accuccuccu cggcgaccag uccugguccu acaucgucga gcgccccaac 300

gcccagaacg gcaucugcua ccccggcguc cucaacgagc ucgaggagcu caaggccuuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccu cccgcggcgu caccaacgcc ugccccuccu acaccaucga cuccuccuuc 480

uaccgcaacc ucgucuggau cgucaagacc gacuccgcca ccuaccccgu caucaagggc 540

accuacaaca acaccggcac ccagcccauc cucuacuucu ggggcgucca ccacccccuc 600

gacaccaccg uccaggacaa ccucuacggc uccggcgaca aguacguccg caugggcacc 660

gaguccauga acuucgccaa gucccccgag aucgccgccc gccccgccgu caacggccag 720

cgcucccgca ucgacuacua cugguccguc cuccgccccg gcgagacccu caacgucgag 780

uccaacggca accucaucgc ccccugguac gccuacaagu ucgucuccac caacaagaag 840

ggcgccgucu ucaaguccga ccucccccauc gagaacugcg acgccaccug ccagaccauc 900

accggcgucc uccgcaccaa caagaccuuc cagaacgucu ccccccucug gaucggcgag 960

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gccgaccgcg aguccaccca gaaggccauc gacggcauca ccaacaaggu caacuccauc 1200

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accuacgacu accccaagua ccagaaggag uccaagcuca accgccaggg caucgagucc 1560

gucaagcucg agaaccucgg cgucuaccag auccucgcca ucuacuccac cgucuccucc 1620

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augcagugcc gcaucugcau cuga 1704

<210> 110050
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI459855/m1

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accgucaccc acuccgucga gcuccucgag aaccagaagg agaagcgcuu cugcaagauc 180

augaacaagg ccccccucga ccucaaggac ugcaccaucg agggcuggau ccucggcaac 240

cccaagugcg accuccuccu cggcgaccag uccugguccu acaucgucga gcgccccaac 300

gcccagaacg gcaucugcua ccccggcguc cucaacgagc ucgaggagcu caaggccuuc 360

aucggcuccg gcgagcgcgu cgagcgcuuc gagauguucc ccaaguccac cugggccggc 420

gucgacaccu cccgcggcgu caccaacgcc ugccccuccu acaccaucga cuccuccuuc 480

uaccgcaacc ucgucuggau cgucaagacc gacuccgcca ccuaccccgu caucaagggc 540

accuacaaca acaccggcac ccagcccauc cucuacuucu ggggcgucca ccacccccuc 600

gacaccaccg uccaggacaa ccucuacggc uccggcgaca aguacguccg caugggcacc 660

gaguccauga acuucgccaa gucccccgag aucgccgccc gccccgccgu caacggccag 720

cgcucccgca ucgacuacua cugguccguc cuccgccccg gcgagacccu caacgucgag 780

uccaacggca accucaucgc ccccugguac gccuacaagu ucgucuccac caacaagaag 840

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accggcgucc uccgcaccaa caagaccuuc cagaacgucu ccccccucug gaucggcgag 960

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<210> 110051
<211> 1692
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ACZ36872

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cgcaaguccg gcggcaucaa caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucuccg acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgccgcgagc ccgcccucau cgucuggggc auccaccacu ccggcuccac caccgagcag 600

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cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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gacggcuggu acggcuuccg ccaccagaac gcccagggcg agggcaccgc cgccgacuac 1140

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cucgucgcca uggagaacca gcacaccauc gaccucgccg acuccgagau gaacaagcuc 1380

uacgagcgcg uccgcaagca gcuccgcgag aacgccgagg aggacggcac cggcugcuuc 1440

gagaucuucc acaagugcga cgacgacugc auggccucca uccgcaacaa caccuacgac 1500

cacuccaagu accgcgagga ggccaugcag aaccgcaucc agaucgaccc cgucaagcuc 1560

uccggcggcu acaaggacgu cauccucugg uucuccuucg gcgccuccug cuuccuccuc 1620

cucgccaucg ccaugggccu cgucuucauc ugcgucaaga acggcaacau gcgcugcacc 1680

aucugcaucu ga 1692

<210> 110052
<211> 1692
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGB51388

<400> 110052
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accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa guaccagcag 660

uccuucgucc ccaaccccga gacccgcccc caggucaacg gccaguccgg ccgcaucgac 720

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caggucgacg ccaacugcga gggcgagugc uaccacuccg gcggcaccau caccuccucc 900

cuccccuucc agaacaucaa cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

gaguccccucc uccucgccac cggcaugaag aacgucccccg agcuccccaa gaagcgccgc 1020

aagcgcggcc ucuucggcgc caucgccggc uucaucgaga acggcuggga gggccucguc 1080

gacggcuggu acggcuuccg ccaccagaac gcccagggcg agggcaccgc cgccgacuac 1140

aaguccaccc aguccgccau cgaccagauc accggcaagc ucaaccgccu caucgagaag 1200

accaaccagc aguucgagcu caucgacaac gaguucaccg aggucgagaa gcagaccggc 1260

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cucgucgcca uggagaacca gcacaccauc gaccucgccg acuccgagau gaacaagcuc 1380

uacgagcgcg uccgcaagca gcuccgcgag aacgccgagg aggacggcac cggcugcuuc 1440

gagaucuucc acaagugcga cgacgacugc auggccucca uccgcaacaa caccuacgac 1500

cacuccaagu accgcgagga ggccaugcag aaccgcaucc agaucgaccc cgucaagcuc 1560

uccggcggcu acaaggacgu cauccucugg uucuccuucg gcgccuccug cuuccuccuc 1620

cucgccaucg ccaugggccu cgucuucauc ugcgucaaga acggcaacau gcgcugcacc 1680

aucugcaucu ga 1692

<210> 110053
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccuccccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

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caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 110054
<211> 1704
<212> RNA
<213> Artificial Sequence

<220>
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accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acgaguucau caacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac uucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaucaucc ccaaguccuc cugguccgac 420

cacgaggccu ccuccggcgu cuccuccgcc ugccccuacc agggcacccc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa gcgcuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgcc 600

gccgagcaga ccaagcucua ccagaacccc accaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

gucaaguccg aggucgagua cggcaacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccuccgcgag 1020

cgccgccgca agcgcggccu cuucggcgcc aucgccggcu ucaucgaggg cggcuggcag 1080

ggcauggucg acggcuggua cggcuaccac cacuccaacg agcagggcuc cggcuacgcc 1140

gccgacaagg aguccaccca gaaggccauc gacggcguca ccaacaaggu caacuccauc 1200

aucgacaaga ugaacaccca guucgaggcc gucggccgcg aguucaacaa ccucgagcgc 1260

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aagaaccucu acgacaaggu ccgccuccag cuccgcgaca acgccaagga gcucggcaac 1440

ggcugcuucg aguucuacca caagugcgac aacgagugca uggaguccgu ccgcaacggc 1500

accuacgacu acccccagua cuccgaggag gcccgccuca agcgcgagga gaucuccggc 1560

gucaagcucg aguccaucgg caccuaccag auccucucca ucuacuccac cgucgccucc 1620

ucccucgccc ucgccaucau ggucgccggc cucucccucu ggaugugcuc caacggcucc 1680

cuccagugcc gcaucugcau cuga 1704

<210> 110055
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI486492

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcacca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgcccucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

uccuucgucc ccucccccgg cgcccgcccc caggucaacg gccucuccgg ccgcaucgac 720

uuccacuggc ucaugcucaa ccccaacgac accgucaccu ucuccuucaa cggcgccuuc 780

aucgcccccg accgcgccuc cuuccuccgc ggcaagucca ugggcaucca guccggcguc 840

caggucgacg ccaacugcga gggcgacugc uaccacuccg gcggcaccau caucuccaac 900

cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgagaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

cacaagugcg acgacgacug cauggccucc auccgcaaca acaccuacga ccacuccaag 1500

uaccgcgagg aggccaugca gaaccgcauc cagaucgacc ccgucaagcu cuccuccggc 1560

uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 110056
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI740738

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

ccccccccagu gcgaccaguu ccucgaguuc uccgccgacc ucaucaucga gcgccgcgag 300

ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcgaguccg gcggcaucga caaggagacc augggcuuca ccuacuccgg cauccgcacc 420

aacggcguca ccuccgccug caagcgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgccaucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

accaagcucu acggcuccgg caacaagcuc gucaccgucg gcuccuccaa cuaccagcag 660

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

cgcucccucc uccucgccac cggcaugaag aacgucccccg agauccccaa gggccgcggc 1020

cucuucggcg ccaucgccgg cuucaucgag aacggcuggg agggccucau cgacggcugg 1080

uacggcuucc gccaccagaa cgcccagggc gagggcaccg ccgccgacua caaguccacc 1140

caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgccaa gaccaaccag 1200

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gucaagcgcc agcuccgcga gaacgccgag gaggacggca ccggcugcuu cgagaucuuc 1440

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

gucaugggcc ucgucuucau cugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 110057
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI730495

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ggcgucgagg ucgucaacgc caccgagacc gucgagcgca ccaacauccc ccgcaucugc 180

uccaagggca agcgcaccgu cgaccucggc cagugcggcc uccucggcac caucaccggc 240

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ggcuccgacg ucugcuaccc cggcaaguuc gucaacgagg aggcccuccg ccagauccuc 360

cgcaaguccg gcggcaucga caaggaggcc augggcuuca ccuacuccgg cauccgcacc 420

aacggcgcca ccuccgccug ccgccgcucc ggcuccuccu ucuacgccga gaugaagugg 480

cuccucucca acaccgacaa cgccgccuuc ccccagauga ccaaguccua caagaacacc 540

cgcaaguccc ccgccaucau cgucuggggc auccaccacu ccgucuccac cgccgagcag 600

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gucaugggcc ucgucuucau gugcgucaag aacggcaaca ugcgcugcac caucugcauc 1680

uga 1683

<210> 110058
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI712926

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cuccccuucc agaacaucga cucccgcgcc gucggcaagu gcccccgcua cgucaagcag 960

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caguccgcca ucgaccagau caccggcaag cucaaccgcc ucaucgccaa gaccaaccag 1200

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uga 1683

<210> 110059
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__AGL44438

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uacaaggacg ucauccucug guucuccuuc ggcgccuccu gcuucauccu ccucgccauc 1620

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uga 1683

<210> 110060
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI445996

<400> 110060

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gccaccaacc ucggccaccc ccucauccuc gacaccugca acgucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggcac cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

acccucuucu ccuccuccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucaccu acaccggcac cuccaagucc ugcuccgacu ccuucuaccg caacaugcgc 480

uggcucaccc agaagaacgg ccucuacccc guccaggacg cccaguucac caacaaccgc 540

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aaccucuaca cccgcaccga caccaccacc uccgucacca ccgagaaccu cgaccgcacc 660

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uacugguccg uccucaagcc cggccagacc cuccgcgucc gcuccaacgg caaccucauc 780

gcccccuggu acggccacgu ccucuccggc gagucccacg gccgcauccu caagaccaac 840

cucaacuccg gcaacugcgu cguccagugc cagaccgaga agggcggccu caacuccacc 900

cuccccuucc acaacaucuc caaguacgcc uucggcaacu gccccaagua caucggcguc 960

aagucccuca agcucgccau cggccuccgc aacgucccg ccaaguccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcuggcccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcaucgccg ccgaccgcgu cuccacccag 1140

aaggccgucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacgucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgcccucgag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

caggaggagu cccgccucga gcgccagaag aucgagggca ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucguccu cgccaugggc 1620

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uga 1683

<210> 110061
<211> 1695
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI433309

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aucggcuacc acgccaacaa cuccaccgag caggucgaca ccaucaugga gaagaacguc 120

accgucaccc acgcccagga cauccucgag aagacccaca acggcaagcu cugcgaccuc 180

gacggcguca agccccucau ccuccgcgac ugcuccgucg ccggcuggcu ccucggcaac 240

cccaugugcg acaaguucaa cgacgucccc gaguggguccu acaucgucga gaaggccaac 300

cccgccaacg accucugcua ccccggcaac cucaacgacu acgaggagcu caagcaccuc 360

cucucccgca ucaaccacuu cgagaagauc cagaccuucc ccaaguccuc cugguccgac 420

cacgaggccu cccucggcgu cuccgccgcc ugccccuacc agggcaugcc cuccuucuuc 480

cgcaacgucg ucuggcucau caagaagaac aacaccuacc ccaccaucaa guccuccuac 540

aacaacacca accaggagga ccuccucauc cucuggggca uccaccacuc caacgacgag 600

gccgagcaga cccgccucua ccagaacucc aacaccuaca ucuccgucgg caccuccacc 660

cucaaccagc gccucguccc caagaucgcc acccgcucca aggucaacgg ccaguccggc 720

cgcauggacu ucuucuggac cauccucaag cccaacgacg ccaucaacuu cgaguccaac 780

ggcaacuuca ucgcccccga guacgccuac aagaucguca agaagggcga cuccgccauc 840

augaaguccg aggucggcua cggcgacugc aacaccaagu gccagacccc caucggcgcc 900

aucaacuccu ccaugcccuu ccacaacauc cacccccuca ccaucggcga gugccccaag 960

uacgucaagu ccaacaagcu cguccucgcc accggccucc gcaacucccc ccagaucgag 1020

acccgcggcc ucuucggcgc caucgccggc uucaucgagg gcggcuggca gggcaugguc 1080

gacggcuggu acggcuacca ccacuccaac gagcagggcu ccggcuacgc cgccgacaag 1140

gaguccaccc agaaggccau cgacggcguc accaacaagg ucaacuccau caucgacaag 1200

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cucguccuca uggagaacga gcgcacccuc gacuuccacg acuccaacgu caagaaccuc 1380

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gaguucuacc acaagugcga caacgagugc auggaguccg uccgcaacgg caccuacgac 1500

uacccccagu acuccgagga ggcccgccuc aagcgcgagg agaucuccgg cgucaagcuc 1560

gaguccaucg gcaccuacca gauccucucc aucuacucca ccgucgccuc cucccucgcc 1620

cucgccauca uggucgccgg ccucucccuc uggaugugcu ccaacggcuc ccuccagugc 1680

cgcaucugca ucuga 1695

<210> 110062
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__EPI470859

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccaacc ucggccgccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucggc ggccgcgagu gguccuacau cgucgagcgc 300

cccuccgccg ucaacggcau gugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

uccuucuucu ccuccgccuc cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acuccggcac cuccaaggcc ugcuccgacu ccuucuaccg cuccaugcgc 480

uggcucaccc agaagaacaa cgccuacccc auccaggacg cccaguacac caacaaccgc 540

ggcaagucca uccucuucau gugggcauc aaccaccccc ccaccgacac cgcccagacc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggacau caaccgcacc 660

uucaagcccg ucaucggccc ccgcccccuc gucaacggcc uccagggccg caucgacuac 720

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cucaacuccg gcuccugcgu cguccagugc cagaccgagc gcggcggccu caacaccacc 900

cuccccuucc acaacgucuc caaguacgcc uucggcaacu gccccaagua cgucggcguc 960

aaguccccuca agcucgccgu cggccuccgc aacgucccccg cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

ggcuuccagc acuccaacga ccagggcguc ggcaucgccg ccgaccgcga cuccacccag 1140

cgcgccaucg acaagaucac cuccaagguc aacaacaucg ucgacaagau gaacaagcag 1200

uacgagauca ucgaccacga guucuccgag gucgagaacc gccucaacau gaucaacaac 1260

aagaucgacg accagaucca ggacaucugg gccuacaacg ccgagcuccu cguccuccuc 1320

gagaaccaga agacccucga cgagcacgac gccaacguca acaaccucua caacaagguc 1380

aagcgcgccc ucggcuccaa cgccauggag gacggcaagg gcugcuucga gcucuaccac 1440

aagugcgacg accagugcau ggagaccauc cgcaacggca ccuacaaccg ccgcaaguac 1500

aaggaggagu cccgccucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

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uga 1683

<210> 110063
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI498037

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aucugcaucg gcuaccaguc caccaacucc accgagaccg ucgacacccu caccgagaac 120

aacgucccccg ucacccacgc caaggagcuc cuccacaccg agcacaacgg caugcucugc 180

gccaccuccc ucggccagcc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

ucccucuucu ccuccgcccg cuccuaccag cgcauccaga ucuuccccga caccaucugg 420

aacgucuccu acaacggcac cuccaaggcc ugcuccggcu ccuucuaccg cuccaugcgc 480

uggcucaccc gcaagaacgg cgacuacccc auccaggacg uccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

uacugguccg uccucaagcc cggccagacc cuccgcauca aguccgacgg caaccucauc 780

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cucaagcgcg gcuccugcac cguccagugc cagaccgaga agggcggccu caacaccacc 900

cuccccuucc agaacgucuc caaguacgcc uucggcaacu gcuccaagua caucggcauc 960

aagucccuca agcucgccgu cggccuccgc aacgucccu cccgcuccuc ccgcggccuc 1020

uucggcgcca ucgccggcuu caucgagggc ggcugguccg gccucgucgc cggcugguac 1080

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aagugcgaca accagugcau ggagaccauc cgcaacggca ccuacaacaa gcgcaaguac 1500

caggaggagu ccaagcucga gcgccagaag aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 110064
<211> 1683
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__AGO17847

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aucugcaucg gccaccaguc caccaacucc accgagaccg ucgacacccu caccgagacc 120

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gccaccaacc ucggccaccc ccucauccuc gacaccugca ccaucgaggg ccucaucuac 240

ggcaaccccu ccugcgaccu ccuccucgag ggccgcgagu gguccuacau cgucgagcgc 300

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ggcaagaaca uccucuucgu cuggggcauc caccaccccc acaccuacac cgaccagacc 600

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uacgagauca ucgaccacga guucuccgag gucgagaccc gccucaacau gaucaacaac 1260

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cgcgaggagu cccgccucga gcgccagcgc aucgagggcg ucaagcucga guccgagggc 1560

accuacaaga uccucaccau cuacuccacc gucgccuccu cccucgucau cgccaugggc 1620

uucgccgccu uccucuucug ggccaugucc aacggcuccu gccgcugcaa caucugcauc 1680

uga 1683

<210> 110065
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__ANZ03807

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cccuccgccg ucaacggccu cugcuacccc ggcaacgucg agaaccucga ggagcuccgc 360

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uggcucaccc gcaagaacgg cgacuacccc acccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacga cacccagcgc 600

aaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

<210> 110066
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
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hemagglutinin__InfluenzaA__EPI680526

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uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

<210> 110067
<211> 1683
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
hemagglutinin__InfluenzaA__ALT20080

<400> 110067
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uggcucaccc gcaagaacgg cgacuacccc auccaggacg cccaguacac caacaaccag 540

ggcaagaaca uccucuucau gugggcauc aaccaccccc ccaccgacac cacccagcgc 600

gaccucuaca cccgcaccga caccaccacc uccgucgcca ccgaggagau caaccgcauc 660

uucaagcccc ucaucggccc ccgcccccuc gucaacggcc ucaugggccg caucgacuac 720

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uga 1683

<210> 110068
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAA43084

<400> 110068
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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110069
<211> 1362
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAA43397

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagggcucca ucaccuacaa ggucgucgcc 180

ggccaggacu ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucc acuccaagga caacggcauc cgcaucggcu ccaagggcga cgucuucguc 300

auccgcgagc ccuucaucuc cugcucccac cucgagugcc gcaccuucuu ccucacccag 360

ggcgcccucc ucaacgacaa gcacucccgc ggcaccuuca aggaccgcuc ccccuaccgc 420

gcccucaugu ccugccccgu cggcgaggcc cccucccccu acaacucccg cuucgagucc 480

gucgccuggu ccgccuccgc cugccacgac ggcgucggcu ggcucaccau cggcaucucc 540

ggccccgacg acggcgccgu cgccguccuc aaguacaacc gcaucaucac cgagaccauc 600

aaguccuggc gcaagaacau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacaa gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

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cccaacggcu ggaccgagac cgacucccgc uucuccaugc gccaggacgu cgucgccauc 1140

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<210> 110070
<211> 1365
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAA43412

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga ccgccacucc aacggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

uccggccccg acaacggcgc cgucgccguc cucaaguaca acggcaucau caccgagacc 600

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaucc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc accaucgaca aguga 1365

<210> 110071
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAG01743

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu accccgccaa caaccaggcc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<210> 110072
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAG01759

<400> 110072
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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cucgccgagu acaagaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110073
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAG01777

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110074
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAG01786

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110075
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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<210> 110076
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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<400> 110077

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augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110078
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAN01171

<400> 110078
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110079
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01172

<400> 110079
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110080
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01173

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110081
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01174

<400> 110081
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110082
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01175

<400> 110082
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110083
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01176

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110084
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01177

<400> 110084
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110085
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01178

<400> 110085
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110086
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAN01179

<400> 110086
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAN01180

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAN01181

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAN01182

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AAN01183

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110091
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<220>
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neuraminidase__InfluenzaA__AAN01184

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAN01185

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAN01186

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AAN01187

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gagugcgacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110097
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110099
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAN64886

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110100
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110101
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAN64888

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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110102
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccaggag augcucugcg agcccaccau caucgagcgc 180

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<210> 110104
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<220>
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neuraminidase__InfluenzaA__AAN64891

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AAO46212

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<210> 110106
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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgacaccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46214

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gccgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

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<210> 110108
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAO46215

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gagugcgacu cccccaccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46216

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46217

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgacccccuc caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110111
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAO46218

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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<220>
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neuraminidase__InfluenzaA__AAO46220

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<210> 110113
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46221

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<210> 110114
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46223

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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neuraminidase__InfluenzaA__AAO46224

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacaucacca agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccac 660

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<210> 110117
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<212> RNA
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<220>
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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<210> 110118
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<212> RNA
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neuraminidase__InfluenzaA__AAO46229

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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<212> RNA
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neuraminidase__InfluenzaA__AAO46230

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<210> 110120
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<220>
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neuraminidase__InfluenzaA__AAO46231

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccguccac gaccgcaucc cccaccgcac ccuccucaug 480

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neuraminidase__InfluenzaA__AAO46233

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neuraminidase__InfluenzaA__AAO46235

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAO46236

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 110125
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neuraminidase__InfluenzaA__AAO46237

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

aucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 110126
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

aucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AAO46241

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110128
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46245

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gacugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgu caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccguccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110129
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46246

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaucaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ccgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110130
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46247

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110131
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46462

<400> 110131

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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<210> 110132
<211> 1410
<212> RNA
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<220>
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46464

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110134
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46465

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110135
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46466

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110136
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46467

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110137
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46468

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu uccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110138
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46469

<400> 110138
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110139
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46471

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110140
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46472

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucac caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110141
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46473

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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<210> 110142
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46474

<400> 110142
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAO46475

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 110144
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46476

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

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cccgucgucg acaucaacgu cgaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110145
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46477

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110146
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAO46478

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gagugcgacu cccccuccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccaucgucg acaucaacau gaaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 110147
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46479

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccgcguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 110148
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46481

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacgu caaggacuac uccaucgacu cccgcuacgu cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46482

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaugau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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<210> 110150
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAO46483

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110151
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO46485

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

<220>
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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAO46492

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<210> 110156
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAO88264

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ggcaagaaga acuacuccaa gaucugcucc aaguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaucaaca ucgccgacgg ccagggcguc 240

aacuccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 780

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<220>
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neuraminidase__InfluenzaA__AAQ10334

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAQ10335

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AAQ10336

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__AAQ10337

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110161
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<220>
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neuraminidase__InfluenzaA__AAQ10339

<400> 110161
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110162
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAQ10341

<400> 110162
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110163
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAQ10343

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgccuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110164
<211> 1191
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAQ10344

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gagugcaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacu ccaaguccug a 1191

<210> 110165
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<212> RNA
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neuraminidase__InfluenzaA__AAR11366

<400> 110165

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa ccucaccugc accaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca agggcaccga ccucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

ccccucggca cccccccccac cgucuccaac uccgacuuca ugugcgucgg cugguccucc 540

accaccugcc acgacggcau cgcccgcaug accaucugca uccagggcaa caacgacaac 600

gccaccgcca ccgucuacua caaccgccgc cucaccacca ccaucaagac cugggcccgc 660

aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc uacaccaagg ucauguacuu ccacaagggc 780

cucgucguca aggaggagga gcuccgcggc uccgcccgcc acaucgagga gugcuccugc 840

uacggccaca accagaaggu caccugcguc ugccgcgaca acuggcaggg cgccaaccgc 900

cccaucaucg agaucgacau gaacacccuc gagcacaccu cccgcuacgu cugcaccggc 960

auccucaccg acaccucccg ccccggcgac aaguccuccg gcgacugcuc caaccccauc 1020

accggcuccc ccggcgcccc cggcgucaag ggcuucggcu uccucaacgg cgacaacacc 1080

uggcucggcc gcaccaucuc cccccgcucc cgcuccggcu ucgagaugcu caagaucccc 1140

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aacugguccg gcuacuccgg cuccuucauc gacuacugga acgacaacuc cgagugcuac 1260

aaccccugcu ucuacgucga gcucauccgc ggccgccccg aggaggccaa guacgucugg 1320

uggaccucca acucccucau cgcccucugc ggcucccccu uccccgucgg ccccggcucc 1380

uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

<210> 110166
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAS89005

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ucccucaugc uccagaucgg caaccucauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc agaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacucc 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

aucgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 110167
<211> 1350

<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAS89006

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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<210> 110168
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAT38822

<400> 110168
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gcccucuuca ucggcgucgg caaccucguc uucaacaccg ucauccacga gaagaucggc 120

gaccaccaga ucgucaccca ccccaccauc augacccccg agguccccaa cugcuccgac 180

accaucauca ccuacaacaa caccgucauc aacaacauca ccaccaccau caucaccgag 240

gccgagcgcc ccuucaaguc cccccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga caacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcau cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg cccagaucau cuacggcggc cgcaugaccg acuccaucaa guccuggcgc 660

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ggccgcauca ucaaguacga gaacgucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaucga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

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<210> 110169
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAV65827

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 110170
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11488

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccgc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110171
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAX11508

<400> 110171
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110172
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11538

<400> 110172
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110173
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11548

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110174
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11558

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110175
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11568

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcuacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110176
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAX11578

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110177
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11588

<400> 110177

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc aucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110178
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAX11598

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110179
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAX11608

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__AAX35844

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<220>
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neuraminidase__InfluenzaA__AAX35854

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AAX56383

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110200
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAX56483

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110201
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAX56503

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAX56513

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110203
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<220>
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AAX56543

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAX56553

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 110206
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<220>
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neuraminidase__InfluenzaA__AAX56563

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AAX56583

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110209
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAX56593

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110210
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAX56603

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccgcccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110211
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAX57647

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAX57657

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110213
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<220>
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neuraminidase__InfluenzaA__AAX57667

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAX57677

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AAX57707

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac cgcuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110219
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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAX57737

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAX57747

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110222

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAX57757

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAX57767

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAX57777

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAX57787

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaaga uccucuucau cgaggagggc 780

aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110227
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucuccuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAX57857

<400> 110231

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAX57877

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AAX76626

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucuccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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<212> RNA
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagaugg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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<212> RNA
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neuraminidase__InfluenzaA__AAY28268

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAY28348

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<220>
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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAY28534

<400> 110282
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110283
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AAY28544

<400> 110283
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110284
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAY28554

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110285
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAY28564

<400> 110285

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110286
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAY28574

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110287
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAY28584

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110288
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAY28594

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAY28611

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAY28651

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110291
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAY44613

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

aucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAY44758

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gagugcaacu cccccuccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcccgaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AAY59038

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccaccaac 420

gacaccgucc acgaccgcac ccccuaccgc acccuccuca ugaacgagcu cggcgucccc 480

uuccaccucg gcaccaagca ggucugcauc gccugguccu ccuccuccug ccacgacggc 540

aaggccuggc uccacgucug cgucaccggc gacgacgaga acgccaccgc cuccuucauc 600

uacaacggcc gccucgucga cuccaucggc uccuggucca agaagauccu ccgcacccag 660

gaguccgagu gcgucugcau caacggcacc ugcaccgucg ucaugaccga cggcuccgcc 720

uccggcaagg ccgacaccaa gauccucuuc aucgaggagg gcaagaucgu ccacaccucc 780

ccccucuccg gcuccgccca gcacgucgag gagugcuccu gcuacccccg cuaccccggc 840

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uccgagaagc uccgcuccgg cuacgagacc uucaagguca ucgagggcug guccaagccc 1140

aacuccaagc uccagaucaa ccgccagguc aucgucgacc gcggcaaccg cuccggcuac 1200

uccggcaucu ucuccgucga gggcaagucc ugcaucaacc gcugcuucua cgucgagcuc 1260

auccgcggcc gcaagcagga gaccgagguc cucuggaccu ccaacuccau cgucgucuuc 1320

ugcggcaccu ccggcaccua cggcaccggc uccuggcccg acggcgccga caucaaccuc 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucaucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggagg ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAY64215

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAY64225

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAY64245

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AAY64265

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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neuraminidase__InfluenzaA__AAY64285

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucuccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agcgcgagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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neuraminidase__InfluenzaA__AAY98100

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cggcggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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accgagaucg ucuaccucac caacaccacc aucgagaagg agaucugccc caagcucgcc 180

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gccuccuuca ucuacaacgg ccgccucguc gacuccaucg ucuccugguc caagaagauc 600

cuccgcaccc aggaguccga gugcgucugc aucaacggca ccugcaccgu cgucaugacc 660

gacggcaacg ccuccggcaa ggccgacacc aagauccucu ucaucgagga gggcaagauc 720

guccacaccu ccacccucuc cggcuccgcc cagcacgucg aggagugcuc cugcuacccc 780

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ggcgacaccc cccgcaagaa cgacuccucc uccuccuccc acugccucga ccccaacaac 960

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ggccgcacca ucuccgagaa gcuccgcucc ggcuacgaga ccuucaaggu caucgagggc 1080

ugguccaacc ccaacuccaa gcuccagauc aaccgccagg ucaucgucga ccgcggcaac 1140

cgcuccggcu acuccggcau cuucuccguc gagggcaagu ccugcaucaa ccgcugcuuc 1200

uacgucgagc ucauccgcgg ccgcaagcag gagaccgagg uccucuggac cuccaacucc 1260

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<220>
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accgagaucg ucuaccucac caacaccacc aucgagaagg agaucugccc caagcucgcc 180

gaguaccgca acugguccaa gccccagugc aacaucaccg gcuucgcccc cuucuccaag 240

gacaacucca uccgccucuc cgccggcggc gacaucuggg ucacccgcga gcccuacguc 300

uccugcgacc ccgacaagug cuaccaguuc gcccucggcc agggcaccac ccucaacaac 360

guccacucca acgacaccgu ccacgaccgc acccccuacc gcacccuccu caugaacgag 420

cucggcgucc ccuuccaccu cggcaccaag caggucugca ucgccugguc cuccuccucc 480

ugccacgacg gcaaggccug gcuccacguc ugcgucaccg gcgacgacga gaacgccacc 540

gccuccuuca ucuacaacgg ccgccucguc gacuccaucg ucuccugguc caagaagauc 600

cuccgcaccc aggaguccga gugcgucugc aucaacggca ccugcaccgu cgucaugacc 660

gacggcaacg ccuccggcaa ggccgacacc aagauccucu ucaucgagga gggcaagauc 720

guccacaccu ccacccucuc cggcuccgcc cagcacgucg aggagugcuc cugcuacccc 780

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gucgacauca acaucaagga cuacuccauc gucuccuccu acgucugcuc cggccucguc 900

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uacgucgagc ucauccgcgg ccgcaagcag gagaccgagg uccucuggac cuccaacucc 1260

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<212> RNA
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accgagaucg ucuaccucac caacaccacc aucgagaagg agaucugccc caagcucgcc 180

gaguaccgca acugguccaa gccccagugc aacaucaccg gcuucgcccc cuucuccaag 240

gacaacucca uccgccucuc cgccggcggc gacaucuggg ucacccgcga gcccuacguc 300

uccugcgacc ccgacaagug cuaccaguuc gcccucggcc agggcaccac ccucaacaac 360

guccacucca acgacaccgu ccacgaccgc acccccuacc gcacccuccu caugaacgag 420

cucggcgucc ccuuccaccu cggcaccaag caggucugca ucgccugguc cuccuccucc 480

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gccuccuuca ucuacaacgg ccgccucguc gacuccaucg ucuccugguc caagaagauc 600

cuccgcaccc aggaguccga gugcgucugc aucaacggca ccugcaccgu cgucaugacc 660

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guccacaccu ccacccucuc cggcuccgcc cagcacgucg aggagugcuc cugcuacccc 780

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ggcgacaccc cccgcaagaa cgacuccucc uccuccuccc acugccucga ccccaacaac 960

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ggccgcacca ucuccgagaa gcuccgcucc ggcuacgaga ccuucaaggu caucgagggc 1080

ugguccaacc ccaacuccaa gcuccagauc aaccgccagg ucaucgucga ccgcggcaac 1140

cgcuccggcu acuccggcau cuucuccguc gagggcaagu ccugcaucaa ccgcugcuuc 1200

uacgucgagc ucauccgcgg ccgcaagcag gagaccgagg uccucuggac cuccaacucc 1260

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<210> 110359
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAZ38465

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAZ38476

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110361
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAZ38487

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAZ38509

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AAZ38608

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AAZ74521

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaucau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AAZ79988

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AAZ79999

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gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110405
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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<400> 110405

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgacccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucgucg acaucaacgu caaggacuac uccaucgacu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caacaacgac cgcuccucca acuccaacug ccgcaacccc 1020

aacaacgaca agggcaacca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc caaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110406
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AAZ80021

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcau ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110407
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAZ83245

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAZ83256

<400> 110408
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcaucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AAZ83269

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AAZ83280

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AAZ83291

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110412
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AAZ83302

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

gccuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcgacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucggcaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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neuraminidase__InfluenzaA__ABA12732

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABA18126

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABA18148

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABA18159

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABA26703

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABA26714

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABA26736

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABA26747

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABA26758

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ABA42250

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABA42261

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABA42272

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110451
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neuraminidase__InfluenzaA__ABA42327

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 110452
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABA42338

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABA42349

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccaucggcuc cugguccaag 660

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110454
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<220>
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neuraminidase__InfluenzaA__ABA42360

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABA42371

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABA42382

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABA42393

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<400> 110459

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABA42468

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABA42534

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110470
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggagg ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110471
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABA42567

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABA42931

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ugcucccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110473
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABA42942

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABA42981

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABA42992

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca uccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABA43203

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ggcacccagc accgcgccga gcccugcaac cgcuccauca ucaacuacga gaacaacacc 180

ugggucaacc agaccuacgu caagaucucc aacaccaacu uccucaccga gaaggccguc 240

gccuccgucc gccucgucgg caacuccucc cucugcccca ucuccggcug ggccgucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcgccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaaggucg ucaaguccgu cgagcucaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acgccggcga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagaagauca ucaccuacaa gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABB02806

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB02828

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc guccucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110490
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABB02861

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucguca acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucgaccucau gcccaucuga 1410

<210> 110492
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABB02872

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB02883

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABB02905

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110498
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<212> RNA
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neuraminidase__InfluenzaA__ABB02939

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

uggaugaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110499
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB02950

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110500
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB02961

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cggcggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110501
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB02972

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110502
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB02983

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABB03005

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABB03016

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABB03027

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cggcggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB03038

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110508
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB03049

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABB03060

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcau ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB03071

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB03093

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acaucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABB03104

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABB03115

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABB03148

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 110516
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABB04286

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

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uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110517
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB04297

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc auccccugcg agcccaucac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB04319

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABB04341

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB04352

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB04374

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccgucgucg acaucaacgu caaggacuac uccaucgacu cccgcuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc caaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABB04931

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB04942

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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neuraminidase__InfluenzaA__ABB04953

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucca ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ABB05186

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccgccaa caagcagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ABB51955

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca ccgucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcccaucc ucggcaccca ggaguccgag ugggucugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaagggca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABB80015

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110562
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB80037

<400> 110562
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucgucg acaucaacgu cgaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110563
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABB80048

<400> 110563
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110564
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB80084

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccuccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110565
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB80095

<400> 110565
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110566
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABB80162

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110567
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB80199

<400> 110567

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110568
<211> 1410
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucggccucau gcccaucuga 1410

<210> 110569
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB80232

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110570
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<220>
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neuraminidase__InfluenzaA__ABB80243

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagaaggaga acgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABB80254

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gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaucug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgccuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB80644

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABB80664

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABB80675

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110581
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110582
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABB80716

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110583
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABB80725

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccgu caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgccuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110584
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB80740

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcugcu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgccuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110585
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABB80751

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcccgaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABB82208

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABB82219

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcuccaaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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accuccguca uccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacau caacaucucc aacaccaaca acgucgucgg ccagggcguc 240

accuccauca ugcucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccgucuucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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accuccguca uccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucuccuc cugguccaag 660

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccaucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ucccuccucc uccagaucgg caacaucguc ucccucugga ucaaccacuc cauccagacc 120

gagggcaaga accacuccga gaugugcaac cagaacguca ucaccuacgu caacaacacc 180

ugggucaacc gcaccuacgu caacaucucc aacaccaaca ucgccaccgu ccaggacguc 240

accuccguca uccucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccguccgc gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaccg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

guccucaccg acggccccuc caacggccag gccuccuaca agaucuucaa ggucgagaag 780

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cgccccugga ucuacuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ABB86947

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ucccuccucu cccagaucgg caacaucguc ucccucugga ucauccacuc cauccagacc 120

ggcggcaaga accacuccga gaugugcaac cagaacguca ucaccuacgu caacaacacc 180

ugggucaacc gcaccuacau caacaucucc aacaccaaca ucgccaccgu caaggacguc 240

accuccguca uccucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABB86957

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ucccuccucc uccagaucgg caacaucguc ucccucugga ucucccacuc cauccagacc 120

ggcgagaaga accacuccga ggucugcaac cagaacauca ucaccuacga gaacaagacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgaggg ccagggcguc 240

accuccauca ucauggccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 780

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gacugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABB96344

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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neuraminidase__InfluenzaA__ABB96398

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC02237

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgccuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110611
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC02258

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gagugcgacu cccccgccaa caaccagauc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccuc caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 110612

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC02269

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110613
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<220>
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neuraminidase__InfluenzaA__ABC02280

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ABC02302

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABC02313

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<210> 110616
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC02324

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagauc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110617
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC02335

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccuc caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC40525

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110620
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC40536

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 110621
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC40547

<400> 110621

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110622
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<220>
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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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neuraminidase__InfluenzaA__ABC40611

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110628
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccgucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110629
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC41728

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110630
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC41742

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110631
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC41956

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABC41967

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110634
<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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neuraminidase__InfluenzaA__ABC42128

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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neuraminidase__InfluenzaA__ABC42139

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110638
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110639
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC42172

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ugcucccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110641
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC42195

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC42310

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABC42464

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC42588

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABC42610

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABC42621

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42632

<400> 110655
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110656
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42643

<400> 110656
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110657
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42654

<400> 110657
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110658
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42665

<400> 110658
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110659
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42676

<400> 110659
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110660
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42687

<400> 110660
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110661
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42698

<400> 110661
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110662
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42709

<400> 110662
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110663
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42720

<400> 110663
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110664
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42742

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ugcuucuuca ugcagaucgc cauccucaug accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC42775

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42786

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110669
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC42819

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC42841

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ABC42852

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABC42863

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110674
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<220>
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neuraminidase__InfluenzaA__ABC42874

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110675
<211> 1410
<212> RNA
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<400> 110675

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110676
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC42896

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110677
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC42914

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC42932

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC42943

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucggcu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC42954

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC42965

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110682
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<220>
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42987

<400> 110683
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110684
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC42998

<400> 110684
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110685
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43009

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110686
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC43020

<400> 110686
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110687
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43042

<400> 110687
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau guccaucuga 1410

<210> 110688
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43053

<400> 110688
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110689
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43064

<400> 110689
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggagaaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110690
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43075

<400> 110690
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110691
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC43086

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110692
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43097

<400> 110692
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110695
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43130

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43141

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43152

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC43163

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABC43174

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110700
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<220>
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neuraminidase__InfluenzaA__ABC43185

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110701
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neuraminidase__InfluenzaA__ABC43478

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC43500

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110704
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43511

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agaccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43522

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC43533

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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<220>
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neuraminidase__InfluenzaA__ABC43544

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC43555

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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neuraminidase__InfluenzaA__ABC46557

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC50170

<400> 110711
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110712
<211> 1410
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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC50181

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110713
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50192

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110714
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50203

<400> 110714
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110715
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50214

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucaucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110716
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50225

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110717
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50247

<400> 110717
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110718
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50258

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cccaucaucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccaucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110719
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC50280

<400> 110719

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110720

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50291

<400> 110720
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110721
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50302

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ugcuuccuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110722
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC50313

<400> 110722
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110723
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC50324

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110724
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC50335

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110725
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ABC50346

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110726
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ABC50357

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110727
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ABC50368

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110728
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110729
<211> 1410
<212> RNA
<213> Artificial Sequence

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<400> 110729

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110731
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neuraminidase__InfluenzaA__ABC50423

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110732
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC54671

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau ccucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC54682

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC67322

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC67474

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110736
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC67546

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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neuraminidase__InfluenzaA__ABC67557

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110738
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC67568

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc gagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 110739
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABC67579

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110740
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67590

<400> 110740
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110741
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC67601

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110742
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67612

<400> 110742
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110743
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67623

<400> 110743
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110744
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67634

<400> 110744
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110745
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC67645

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110746
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67656

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110747
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67700

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110748
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC67711

<400> 110748
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110751
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<213> Artificial Sequence

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC67853

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABC67970

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110759
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacaac uccuucuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ucgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110760
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC68003

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucaucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABC68052

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110762
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABC68063

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABC68074

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ABC68085

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<210> 110765
<211> 1410
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 110766
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccagc agaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacucc 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggacaag 720

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<212> RNA
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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ABC85856

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABC85966

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ABC86140

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC86151

<400> 110804
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110805
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABC86240

<400> 110805

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110806
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABC97377

<400> 110806
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcuccgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caacaacgac cgcuccucca acuccuacug ccgcaacccc 1020

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uggaugggcc gcaccaucuc cgaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110807
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD15452

<400> 110807
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110808
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD15463

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110809
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD15474

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110810
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD15485

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 110811
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15496

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110812
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15507

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110813
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD15518

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcggc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 110814
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110815
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD15551

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110816
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD15562

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15573

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110818
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15584

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD15595

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110820
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15606

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD15617

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD15639

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gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110824
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110825
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110826
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABD15705

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110828
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<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110829
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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 110830
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<210> 110831
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABD15782

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110834
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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD16317

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110836
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD16328

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ABD16339

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABD16361

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110839
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<212> RNA
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neuraminidase__InfluenzaA__ABD16475

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD16486

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD16497

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110860
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABD60815

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110861
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD60826

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110862
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD60837

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ugcuuccuca ugcagaucgc cguccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110863
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD60848

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ugcuuccuca ugcaggucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD60881

<400> 110864
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110865
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD60892

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcguca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110866
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<220>
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neuraminidase__InfluenzaA__ABD60903

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 110867
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ABD60914

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110868
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD60925

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110869
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD60947

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ABD61532

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ABD77601

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD77612

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug gcucaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccaucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD77634

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccaucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110890
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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110891
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD77656

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD77700

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110893
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD77722

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD77733

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABD77744

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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABD77755

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABD77766

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110898
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD77777

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110899
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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1362
<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ABD77799

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ggccaggacu ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucc acuccaagga caacggcauc cgcaucggcu ccaagggcga cgucuucguc 300

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gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgaca acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaagau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccaacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacca gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ccgacggcgc caacggcguc aagggcuucu ccuaccgcua cggcaacggc 1020

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neuraminidase__InfluenzaA__ABD77810

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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caccugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aaggagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cggcggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg acugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABD77887

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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neuraminidase__InfluenzaA__ABD77920

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABD77964

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cgcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABD77986

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ABD77997

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110916
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<220>
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neuraminidase__InfluenzaA__ABD78019

<400> 110916
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110917
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD78030

<400> 110917
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaaccg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110918
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD78041

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccuccac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110919
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD78052

<400> 110919
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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110920
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD78063

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110921
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD78074

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110922
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD78085

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABD78096

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110924
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD78118

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABD78129

<400> 110925

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110926

<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110927
<211> 1353
<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ABD79115

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ucccucaucu uccagaucgg caacaucguc uccaucugga ucucccacuc caucaccggc 120

accugcaacc gcuccaucua cgucaacauc uccaacacca acgucgucgc cggcaaggac 180

accaccuccg ucauccucgc cggcaacucc ucccucugcc ccauccgcgg cugggccauc 240

uacuccaagg acaacggcgu ccgcaucggc uccaagggcg acgucuucgu cauccgcgag 300

cccuucaucu ccugcuccca ccucgagugc cgcaccuucu uccucaccca gggcgcccuc 360

cucaacgaca agcacuccaa cggcaccguc aaggaccgcu cccccuaccg cacccucaug 420

uccugccccg ucggcgaggc ccccucccccc uacaacuccc gcuucgaguc cgucgccugg 480

uccgccuccg ccugccacga cggcaugggc uggcucacca ucggcaucuc cggccccgac 540

gacggcgccg ucgccguccu caaguacaac ggcaucauca ccggcaccau caaguccugg 600

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ggccgcacca aguccuccuc cucccgccag ggcuucgaga ugaucuggga ccccaacggc 1080

uggaccgaga ccgacuccaa cuucuucaug aagcaggacg ucgucgccgu caccgacugg 1140

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cccugcuucu gggucgagcu cauccgcggc cgccccaagg agaacaccau cuggaccucc 1260

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucgacugguc cuggcccgac 1320

ggcgccgagc uccccuucac caucgacaag uga 1353

<210> 110928
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD79126

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD79137

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110930
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD79148

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110931
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD79159

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110932
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD79170

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABD79181

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD79192

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110935
<211> 1410
<212> RNA
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<220>
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<400> 110935
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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110936
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD79214

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110937
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD79236

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacaa caccgcccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110938
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD79247

<400> 110938
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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 110939
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94737

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110940
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD94748

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110941
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94770

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110943
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD94792

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110944
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94803

<400> 110944
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110945
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94814

<400> 110945
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110946
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94825

<400> 110946
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110947
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABD94847

<400> 110947

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaagau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gucaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110948

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94858

<400> 110948
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110949
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94880

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110950
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD94891

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110951
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD94902

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110952
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD94924

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ugccuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 110953
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD94946

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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<212> RNA
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD94990

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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<400> 110957

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacauccac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD95012

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABD95034

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucau ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110963
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD95078

<400> 110963
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110964
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD95089

<400> 110964
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110965
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95100

<400> 110965
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110966
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95111

<400> 110966
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110967
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95122

<400> 110967
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110968
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABD95144

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110969
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95155

<400> 110969
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110970
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95166

<400> 110970
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110971
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95177

<400> 110971
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110972
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD95188

<400> 110972
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110973
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95199

<400> 110973
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110974
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95210

<400> 110974
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110975
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95221

<400> 110975
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110976
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95232

<400> 110976
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110977
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95243

<400> 110977
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110978
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95254

<400> 110978
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110979
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD95265

<400> 110979
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110980
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95276

<400> 110980
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110981
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95287

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110982
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABD95298

<400> 110982
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110983
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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<400> 110983
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu gcaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110984
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95320

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110985
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95331

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110986
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABD95342

<400> 110986
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110987
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABD95353

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABE11660

<400> 110988
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABE11671

<400> 110989
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca acaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE11682

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110991
<211> 1413

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE11693

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110992
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE11704

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110993
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE11715

<400> 110993
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110994
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE11726

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110995
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE11737

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE11815

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110997
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<220>
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neuraminidase__InfluenzaA__ABE11826

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 110998
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neuraminidase__InfluenzaA__ABE11837

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE11848

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE11859

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111001
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABE11903

<400> 111001

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111002

<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE11925

<400> 111002
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccgcc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111003
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE11952

<400> 111003
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccgacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111004
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12035

<400> 111004
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111005
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12094

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111006
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12126

<400> 111006
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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111007
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12263

<400> 111007
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111008
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12626

<400> 111008
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaagug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111009
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE12650

<400> 111009
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABE13332

<400> 111011

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE13558

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE13642

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABE13668

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABE13836

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABE14033

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABE14055

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABE14857

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaccaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABE15594

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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<210> 111020
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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<210> 111021
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neuraminidase__InfluenzaA__ABE97641

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uggaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaucgucu ccugguccug gcccgacggc 1320

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<210> 111022
<211> 1350
<212> RNA
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<220>
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ggcaaccagc accaggccga guccaucucc aacaacaacc uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

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neuraminidase__InfluenzaA__ABE97644

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 111024
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<212> RNA
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ggcaaccagc accaggccga gcccaccucc uccaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 111025
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<212> RNA
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gagaaccagc accaggccga guccaucucc aacaccaacc cccccaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaccc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 111026
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accgcgccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 111027
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<220>
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neuraminidase__InfluenzaA__ABE97649

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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<210> 111028
<211> 1350
<212> RNA
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neuraminidase__InfluenzaA__ABE97651

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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neuraminidase__InfluenzaA__ABE97653

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111031
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE97655

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaccucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 111032
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<212> RNA
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ucccucgucc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

gacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accagaccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcucca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

gacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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neuraminidase__InfluenzaA__ABE97659

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

gacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

gacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111036
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<212> RNA
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neuraminidase__InfluenzaA__ABE97661

<400> 111036
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accagaccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

gacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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<210> 111037
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<212> RNA
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

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neuraminidase__InfluenzaA__ABE97665

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccacgg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111040
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<212> RNA
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neuraminidase__InfluenzaA__ABE97666

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccccc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111041
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97667

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ucccucaugc uccagaucgg caacaugauc uccaucuggg gcucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaucgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111042
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97669

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111043
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97670

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111044
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97671

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

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<212> RNA
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neuraminidase__InfluenzaA__ABE97672

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggcccuc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111046
<211> 1350
<212> RNA
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neuraminidase__InfluenzaA__ABE97675

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaucga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gaucgagaag 720

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uccgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111047
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97676

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111048
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97677

<400> 111048
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ucccucaugc uccagaucgg caacaucauc uccaucuggg uccgccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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ugcuaccccg acgccggcga gaucaccugc gucugccgcg acaacuggca cggcuccaac 840

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111049
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<220>
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neuraminidase__InfluenzaA__ABE97679

<400> 111049
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ucccucaugc uccagaucgg caacaugauc uccaucuggg uccgccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111050
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97680

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111051
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97681

<400> 111051
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111052
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE97682

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaguccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccgucgucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111053
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97684

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacucc ggcaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111054
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE97685

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccggcg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111055
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97686

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111056
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE97687

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111057
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97688

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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<210> 111058
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97690

<400> 111058
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcuc ccucaugucc 420

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gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gaugaagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111059
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neuraminidase__InfluenzaA__ABE97691

<400> 111059
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucaa gcgcgagccc 300

ugcaucuccu gcucccaccu caagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

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neuraminidase__InfluenzaA__ABE97694

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gacuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uccgucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111061
<211> 1350

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABE97696

<400> 111061
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg cuccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugcuccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111062
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97697

<400> 111062
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaacga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111063
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<220>
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<400> 111063
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccac cgacaaguga 1350

<210> 111064
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97703

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

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neuraminidase__InfluenzaA__ABE97706

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ucccucaugc uccaggucgg caacaugauc ucccucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gcgcgccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111067
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABE97707

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaagggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111068
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97708

<400> 111068
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccacgg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gaugaagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111069
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97710

<400> 111069
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucaac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acgccggcga gaucaccugc gucugccgcg acaacuggca cggcuccaac 840

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cucccucaag caggacaucg ucgccaucac cgacuggucc 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111070
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97711

<400> 111070
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cgacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acgccggcga gaucaccugc gucugccgcg acaacuggca cggcuccaac 840

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagaugg ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111071
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97712

<400> 111071
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111072
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97713

<400> 111072
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111073
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97715

<400> 111073
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111074
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97717

<400> 111074
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aaccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111075
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97718

<400> 111075
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111076
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97719

<400> 111076
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gaugaagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111077
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABE97720

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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcaaccagc accaggccga gcccaucucc aacgccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

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<210> 111078
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<220>
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<400> 111078
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111079
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47564

<400> 111079
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111080
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47575

<400> 111080
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccgucg cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccacuu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111081
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47586

<400> 111081
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111082
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47597

<400> 111082
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111083
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47608

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111084
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47619

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111085
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47630

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccaugg cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111086
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47652

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuacccca acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111087
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47663

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111088
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47674

<400> 111088
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcauc cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111089
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABF47696

<400> 111089
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111090
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47707

<400> 111090
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caagggcacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111091
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47718

<400> 111091
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111092
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47729

<400> 111092
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111093
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47740

<400> 111093
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111094
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47751

<400> 111094
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111095
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47773

<400> 111095
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111096
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47784

<400> 111096
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111097
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47795

<400> 111097
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111098
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47806

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111099
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47817

<400> 111099
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111100
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47839

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111101
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47850

<400> 111101
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111102
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF47872

<400> 111102
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111103
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47883

<400> 111103
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111104
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47894

<400> 111104
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111105
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF47905

<400> 111105
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF47958

<400> 111106
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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagggcucca ucaccuacaa ggucgucgcc 180

ggccaggacu ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucc acuccaagga caacggcauc cgcaucggcu ccaagggcga cgucuucguc 300

auccgcgagc ccuucaucuc cugcucccac cucgagugcc gcaccuucuu ccucacccag 360

ggcgcccucc ucaacgacaa gcacucccgc ggcaccuuca aggaccgcuc ccccuaccgc 420

gcccucaugu ccugccccgu cggcgaggcc cccucccccu acaacucccg cuucgagucc 480

gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgacg acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaacau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacaa gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ccgacggcgc caacggcguc aagggcuucu ccuacaagua cggcaacggc 1020

gucuggaucg gccgcaccaa guccgacucc ucccgccacg gcuucgagau gaucugggac 1080

cccaacggcu ggaccgagac cgacucccgc uucuccaugc gccaggacgu cgucgccaug 1140

accgaccgcu ccggcuacuc cggcuccuuc guccagcacc ccgagcucac cggccucgac 1200

ugcaugcgcc ccugcuucug ggucgagcuc auccgcggcc uccccgagga ggacgccauc 1260

uggaccuccg gcuccaucau cuccuucugc ggcgucaacu ccgacaccgu cgacuggucc 1320

uggcccgacg gcgccgagcu ccccuucacc aucgacaagu ga 1362

<210> 111107
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF56651

<400> 111107
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ucccucaugc uccaggucgg caacaugauc uccaucuggg ucucccacuc cauccacacc 120

ggcucccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acgccggcga gaucaccugc gucugccgcg acaacuggca cggcuccaac 840

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccucc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accgagaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111108
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82654

<400> 111108
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ugcuuccuca ugcaggucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111109
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82665

<400> 111109
augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111110
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82676

<400> 111110
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111111
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABF82687

<400> 111111

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagacca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111112

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82698

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caccaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111113
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82709

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111114
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82822

<400> 111114
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111115
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82833

<400> 111115
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111116
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF82844

<400> 111116
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111117
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF82855

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagauc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111118
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82866

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111119
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82888

<400> 111119
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111120
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABF82910

<400> 111120
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111121
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABF82921

<400> 111121

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111122
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111123
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABF82943

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111124
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG20474

<400> 111124
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacgucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ucuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111125
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG26761

<400> 111125
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111126
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26772

<400> 111126
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111127
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26783

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuacccca acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111128
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26794

<400> 111128
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111129
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26805

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111130
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26816

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111131
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26827

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111132
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26838

<400> 111132
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111133
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABG26860

<400> 111133

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111134

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26871

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccua caaccagauc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111136
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<220>
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neuraminidase__InfluenzaA__ABG26915

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111137
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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<220>
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neuraminidase__InfluenzaA__ABG26948

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111139
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG26959

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37123

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37134

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37145

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37156

<400> 111143

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111144
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<212> RNA
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<220>
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<400> 111144
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111145
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37189

<400> 111145
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc cuccucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111146
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37200

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgacuccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111147
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37211

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacaacgaga agggcaacca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111148
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37233

<400> 111148
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccaccauc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111149
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37244

<400> 111149
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37255

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111151
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37266

<400> 111151
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111152
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37277

<400> 111152
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG37288

<400> 111153
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111154
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37310

<400> 111154
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111155
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 111155

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111156
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37332

<400> 111156
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucca ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc ggcgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111157
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37343

<400> 111157
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37354

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37365

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37387

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111161
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37398

<400> 111161
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111162
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37409

<400> 111162
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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111163
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG37442

<400> 111163
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguuc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagggc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111164
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37453

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111165
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37464

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37475

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111167
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37486

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaacc ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111168
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37497

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37508

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111170
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37519

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111171
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37530

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG37541

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111173
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37552

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111174
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37563

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111175
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG37585

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111176
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG37596

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111177
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG37607

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABG47810

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABG47832

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ucccucaucc uccaggucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111181
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neuraminidase__InfluenzaA__ABG47843

<400> 111181
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111182
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47865

<400> 111182
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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111183
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47876

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111184
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47887

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111185
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47898

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111186
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47909

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111187
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

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<400> 111187

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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111188

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47931

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111189
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47942

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ABG47953

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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 111191
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG47964

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111192
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG47975

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111193
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47986

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG47997

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111195
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48008

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111196
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48019

<400> 111196
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111197
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48030

<400> 111197

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111198
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111199
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48052

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 111200
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<220>
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neuraminidase__InfluenzaA__ABG48063

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<210> 111201
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG48074

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccaucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111202
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48085

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111203
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG48107

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111204
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG48118

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111205
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG48129

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111206
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 111207
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48151

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111208
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48173

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABG48184

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111210
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neuraminidase__InfluenzaA__ABG48195

<400> 111210
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug caucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111211
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48206

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111212
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48217

<400> 111212
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111213
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG48228

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111214
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48239

<400> 111214
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111215
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG48250

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111216
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG48272

<400> 111216
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111217
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48294

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc aucccugcc agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucgaccucau gcccaucuga 1410

<210> 111218
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48305

<400> 111218
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111219
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG48316

<400> 111219
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111220
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48327

<400> 111220
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111221
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48338

<400> 111221
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111222
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG48349

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111223
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48360

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gccaccgccu ccuucaucua cgacggcaag cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111224
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG48371

<400> 111224
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111225
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG67138

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111226
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67149

<400> 111226
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111227
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67160

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111228
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG67171

<400> 111228
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111229
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG67182

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111230
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABG67193

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111231
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67204

<400> 111231
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111232
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67215

<400> 111232
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111233
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG67226

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111234
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG67248

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111235
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG67480

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111236
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67494

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABG67505

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111238
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG67516

<400> 111238
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111239
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67527

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111240
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67538

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaccaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucaucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111241
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABG67549

<400> 111241

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111242

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG67560

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG67571

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG67582

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111245
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<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111246
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67604

<400> 111246
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111247
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67615

<400> 111247
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111248
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67626

<400> 111248
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111249
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67637

<400> 111249
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111250
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67648

<400> 111250
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111251
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG67659

<400> 111251

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

ucccgcgaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111252
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABG67670

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ugcuuccuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG79944

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111254
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG79955

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111255
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG79966

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccagaacccc 1020

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111256
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG79977

<400> 111256
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111257
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG79988

<400> 111257
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111258
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG79999

<400> 111258
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111259
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80010

<400> 111259
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggcaaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111260
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80021

<400> 111260
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111261
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80032

<400> 111261
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111262
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80043

<400> 111262
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111263
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80054

<400> 111263
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111264
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG80065

<400> 111264
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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111265
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80076

<400> 111265
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111266
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80087

<400> 111266
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ugcuuccuca ugcagaucgc cguccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111267
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80098

<400> 111267
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111268
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80109

<400> 111268
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111269
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80120

<400> 111269
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc aucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111270
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80131

<400> 111270
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc caucaugguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111271
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80142

<400> 111271
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111272
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80153

<400> 111272
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111273
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80164

<400> 111273
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111274
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80186

<400> 111274
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111275
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80197

<400> 111275
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111276
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80219

<400> 111276
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111277
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80230

<400> 111277
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccgag uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111278
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80241

<400> 111278
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111279
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80252

<400> 111279
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111280
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80263

<400> 111280
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111281
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80274

<400> 111281
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111282
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80285

<400> 111282
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111283
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80296

<400> 111283
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111284
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABG80307

<400> 111284
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111285
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80318

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111286
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80329

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111287
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG80340

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111288
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80351

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111289
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG80373

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111290
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG80384

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111291
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80395

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111292
<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111293
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80417

<400> 111293
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111294
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG80428

<400> 111294
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111295
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88292

<400> 111295
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111296

<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88314

<400> 111296
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuacccca acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111297
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88325

<400> 111297
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccuccg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ccggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111298
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88336

<400> 111298
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagc ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga ccaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111299
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88347

<400> 111299
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ggccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagc ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga ccaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111300
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88358

<400> 111300
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111301
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88369

<400> 111301
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABG88380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88391

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111304
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88402

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111305
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88413

<400> 111305

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111306
<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111307
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88435

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG88446

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG88457

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG88468

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG88512

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111315
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABG88523

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88534

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgaga acaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88567

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ugcuuccuca ugcagaucgc cguccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88611

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG88622

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111321
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111322
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88655

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABG88666

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88677

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABG88688

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABG88699

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ABG88721

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABG88732

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABG88787

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI16506

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ucccucaugc uccagaucgg caacaugguc ucccucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggucga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc augaucaccg acaccaucaa guccuggcgc 600

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cgcaccaagu cccccuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20840

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ABI20862

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ccggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111339
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABI20873

<400> 111339
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ucccucaccc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccaccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauca ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111340
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20895

<400> 111340
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111341
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20906

<400> 111341
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111342
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20928

<400> 111342
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111343
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20939

<400> 111343
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111344
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20950

<400> 111344
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111345
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20961

<400> 111345
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111346
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20983

<400> 111346
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ugcuuccuca ugcaggucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111347
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI20994

<400> 111347
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21005

<400> 111348
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ugcuuccuca ugcagaucgc cguccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI21027

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccccc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21038

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21049

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21060

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI21071

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21082

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__ABI21093

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABI21104

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21115

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111360
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABI21137

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111361
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21148

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111362
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21159

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111363
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI21170

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI21181

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI21192

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caccugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ABI21203

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21214

<400> 111367
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacauc 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111368
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21247

<400> 111368
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcaugaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111369
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21258

<400> 111369
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111370
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21269

<400> 111370
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111371
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABI21280

<400> 111371

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111372

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21302

<400> 111372
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111373
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21313

<400> 111373
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111374
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21324

<400> 111374
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111375
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21335

<400> 111375
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111376
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI21346

<400> 111376
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111388
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI21500

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI21511

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABI21533

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABI21544

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABI21555

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABI21566

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111396
<211> 1413
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<220>
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neuraminidase__InfluenzaA__ABI21577

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI22112

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacgag aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111398
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI22162

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucgaccucau gcccaucuga 1410

<210> 111399
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI23981

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc gccaggccga guccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 420

ucccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111400
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI26649

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111401
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<220>
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neuraminidase__InfluenzaA__ABI30370

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111402
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neuraminidase__InfluenzaA__ABI30392

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111403
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI30403

<400> 111403

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111405
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111406
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABI30436

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111407
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30447

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111408
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI30458

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30469

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI30480

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI30491

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucacca agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI30502

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI30513

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI30524

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111416
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30546

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI30579

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI30590

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagggcug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABI30612

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ABI30736

<400> 111423
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccgucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111424
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30758

<400> 111424
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111425
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30769

<400> 111425
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111426
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30780

<400> 111426
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111427
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30791

<400> 111427
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111428
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30802

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111429
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30813

<400> 111429
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30824

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111431
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30835

<400> 111431
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111432
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI30846

<400> 111432
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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gccgagcucc ccuucaccau cgacaaguga 1350

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neuraminidase__InfluenzaA__ABI36287

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cuccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacga gaccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

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neuraminidase__InfluenzaA__ABI49409

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccgcgg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acaucgagga gugcuccugc 840

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc caaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaccaccaga ucgucaccca ccccaccauc augacccccg agguccccaa cugcuccgac 180

accaucauca ccuacaacaa caccgucauc aacaacauca ccaccaccau caucaccgag 240

gccgagcgcc ccuucaaguc cccccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga caacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcau cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg cccagaucau cuacggcggc cgcaugaccg acuccaucaa guccuggcgc 660

aaggacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcgucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcgucuacug gauccgcgag 780

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cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

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neuraminidase__InfluenzaA__ABI92294

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABI92305

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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neuraminidase__InfluenzaA__ABI92316

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABI92327

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABI92404

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABI92415

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgaggagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABI92514

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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<400> 111480
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug gucccgcccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI92569

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caacaagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagggcug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagggcug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI92602

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu cccucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI92613

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI92624

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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neuraminidase__InfluenzaA__ABI92646

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABI92657

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI92910

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111518
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<212> RNA
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<220>
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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ABI93009

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111520
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABI93020

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABI93031

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111522
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI93042

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABI93053

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI93064

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ABI93086

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111527
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABI93108

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111529
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac aacuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111530
<211> 1416
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABI94584

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa ccucaccugc accaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca agggcaccga ccucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

ccccucggca cccccccccac cgucuccaac uccgacuuca ugugcgucgg cugguccucc 540

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gccaccgcca ccgucuacua caaccgccgc cucaccacca ccaucaagac cugggcccgc 660

aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc uacaccaagg ucauguacuu ccacaagggc 780

cucgucguca aggaggagga gcuccgcggc uccgcccgcc acaucgagga gugcuccugc 840

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uggcucggcc gcaccaucuc cccccgcucc cgcuccggcu ucgagaugcu caagaucccc 1140

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ugggccucca acucccucau cgcccucugc ggcucccccu uccccgucgg cuccggcucc 1380

uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

<210> 111531
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABI95220

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111532
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI95242

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABI95253

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABI95264

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABI95275

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gccccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag aaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111538
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABI96133

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111541
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<220>

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABJ09110

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABJ09143

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ABJ09154

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABJ09165

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111546
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABJ09176

<400> 111546
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111547
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ09198

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111548
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09209

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09220

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccaagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccgcgg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111550
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ09231

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111551
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09242

<400> 111551

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111552
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABJ09253

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111553
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09264

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua caugaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucguccucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09286

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111555
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ09308

<400> 111555
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111556
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABJ09319

<400> 111556
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111557
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09330

<400> 111557
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca acaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111558
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09341

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccuccucggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111559
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09352

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac ggccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111560
<211> 1407
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ09374

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uucuucaugc agaucgccau ccucaucacc accgucaccc uccacuucaa gcaguacgag 120

uucaacuccc cccccaacaa ccaggucaug cucugcgagc ccaccaucau cgagcgcaac 180

aucaccgaga ucgucuaccu caccaacacc accaucgaga aggagaucug ccccaagcuc 240

gccgaguacc gcaacugguc caagccccag ugcgacauca ccggcuucgc ccccuucucc 300

aaggacaacu ccauccgccu cuccgccggc ggcgacaucu gggucacccg cgagcccuac 360

gucuccugcg accccgacaa gugcuaccag uucgcccucg gccagggcac cacccucaac 420

aacguccacu ccaacgacac cguccacgac cgcacccccu accgcacccu ccucaugaac 480

gagcucggcg uccccuucca ccucggcacc aagcaggucu gcaucgccug guccuccucc 540

uccugccacg acggcaaggc cuggcuccac gucugcguca ccggcgacga caagaacgcc 600

accgccuccu ucaucuacaa cggccgccuc gucgacucca ucgucuccug guccaagaag 660

auccuccgca cccaggaguc cgagugcguc ugcaucaacg gcaccugcac cgucgucaug 720

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ccccgcuacc ccggcguccg cugcgucugc cgcgacaacu ggaagggcuc caaccgcccc 900

aucgucgaca ucaacaucaa ggacuacucc aucgucuccu ccuacgucug cuccggccuc 960

gucggcgaca ccccccgcaa gaacgacucc uccuccuccu cccacugccu cgaccccaac 1020

aacgaggagg gcggccacgg cgucaagggc ugggccuucg acgacggcaa cgacgucugg 1080

augggccgca ccaucuccga gaagcuccgc uccggcuacg agaccuucaa ggucaucgag 1140

ggcuggucca accccaacuc caagcuccag aucaaccgcc aggucaucgu cgaccgcggc 1200

aaccgcuccg gcuacuccgg caucuucucc gucgagggca aguccugcau caaccgcugc 1260

uucuacgucg agcucauccg cggcaagaag gaggagaccg agguccucug gaccuccaac 1320

uccaucgucg ucuucugcgg caccuccggc accuacggca ccggcuccug gcccgacggc 1380

gccgacauca accucaugcc caucuga 1407

<210> 111561
<211> 1410
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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABJ09385

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABJ16590

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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<211> 1410
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111564
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<220>
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neuraminidase__InfluenzaA__ABJ16612

<400> 111564
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccgucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 111565
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ABJ16623

<400> 111565
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111566
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ16634

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111567
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ16656

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABJ16667

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111569
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ16678

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABJ16689

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ16700

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcaag aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ16711

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABJ16733

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111574
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ16744

<400> 111574
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111575
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ16755

<400> 111575
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111576
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ16766

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111577
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABJ16777

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111578
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ16788

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111579
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ53441

<400> 111579
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111580
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ53452

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111581
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ53463

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111582
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABJ53474

<400> 111582
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111583
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ53485

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111584
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABJ53496

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111585
<211> 1413

<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABJ53518

<400> 111586
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aaccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caaccucucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK39965

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABK40064

<400> 111595

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

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neuraminidase__InfluenzaA__ABK40560

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ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111602
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40582

<400> 111602
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111603
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40593

<400> 111603
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccucccacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuacaaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111604
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40604

<400> 111604
augaacccca accagaagau caucaccauc ggcuccaucu gcaugaccau cggcaucauc 60

ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111605
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40615

<400> 111605

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111606
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABK40626

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111607
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40648

<400> 111607
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcauccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgaccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111608
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40659

<400> 111608
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111609
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40681

<400> 111609
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111610
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40692

<400> 111610
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccugggag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111611
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111614
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK40736

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK40747

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111616
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABK79951

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111617
<211> 1413
<212> RNA
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<220>
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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111618
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111619
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK79995

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABK80028

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111621
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABK80039

<400> 111621
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111622
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABK80050

<400> 111622
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111623
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK80061

<400> 111623
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111624
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK80072

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK80083

<400> 111625
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccaggcc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111630
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABK80160

<400> 111630
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccaggcc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111631
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucuucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABK80204

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABK80259

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABK80303

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gagugcaacu cccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccauca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaugaagaag 720

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neuraminidase__InfluenzaA__ABL07032

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ggcaaccagu accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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neuraminidase__InfluenzaA__ABL31768

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABL67168

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111650
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABL67179

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>

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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABL67201

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABL67212

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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABL67256

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABL67267

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABL67278

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABL67289

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gagugcaacu cccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111658
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111659
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111660
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABL67322

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gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABL67333

<400> 111661

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111662
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABL67344

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga gaagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111664
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABL67366

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111665
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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neuraminidase__InfluenzaA__ABL67388

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc acaaggccga gcccaucucc aacaccaacc uccucaccga gaaggccguc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucgu ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111677
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22029

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22040

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111679
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22062

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111680
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22073

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111681
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22084

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucca ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111686
<211> 1410
<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111687
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22150

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccgag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111688
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22161

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111689
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22172

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111690
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22183

<400> 111690
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111691
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM22194

<400> 111691
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22205

<400> 111692
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22216

<400> 111693
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22227

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111695
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM22238

<400> 111695
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111696
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22271

<400> 111696
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucggc gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111697
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABM22282

<400> 111697

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111698
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22304

<400> 111698
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111699
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22315

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111700
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABM22326

<400> 111700
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111701
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM22337

<400> 111701
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111702
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22348

<400> 111702
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111703
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22359

<400> 111703
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111704
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM22370

<400> 111704
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111705
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM66867

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111706
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM66900

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111707
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM66911

<400> 111707
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111708
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM66922

<400> 111708
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111709
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM66933

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111710
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM66944

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM66966

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111716
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM67010

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM67021

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111718
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABM67054

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111719
<211> 1350

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM68048

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ggcaaccagu gccaggccgg ccccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagucc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111720
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABM68049

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ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111721
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM90436

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagaag 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaugaagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111722
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM90447

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagaag 120

ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 111723
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABM90458

<400> 111723
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaugaagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111725
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 111726
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<212> RNA
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<220>
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<400> 111726
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gucuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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<210> 111728
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gucuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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<210> 111729
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<212> RNA
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<220>
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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gucuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABN50903

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111733
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN50920

<400> 111733
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111734
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50931

<400> 111734
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acgccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaaguu ccucgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111735
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50943

<400> 111735
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acgccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaaguu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111736
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50954

<400> 111736
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111737
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50965

<400> 111737
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111738
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50976

<400> 111738
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111739
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN50987

<400> 111739
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111740
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABN50998

<400> 111740
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111741
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN51013

<400> 111741
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111742
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN51024

<400> 111742
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111743
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABN51035

<400> 111743
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111744
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABN51046

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111745
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN51069

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagaugg ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111746
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN51080

<400> 111746
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111747
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABN51091

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111748
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN51102

<400> 111748
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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<210> 111749
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ABN51113

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111750
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN51124

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111751
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN51135

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN51157

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111754
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABN59393

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABN59415

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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uccggccccg acaacggcgc cgucgccguc cucaaguaca acggcaucau caccgagacc 600

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

aucuggaccu ccgccuccuc caucuccuuc ugcggcguca acuccgacac cgucgacugg 1320

uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

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neuraminidase__InfluenzaA__ABN59426

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccugggag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuuccuca uccagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABO32819

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ABO32918

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABO32962

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucaagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<400> 111783
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111784
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO33039

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111785
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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<210> 111786
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<220>
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<211> 1410
<212> RNA
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<220>
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<400> 111787

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<400> 111788

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ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABO38013

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaaca ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagaugg ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111791
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO38035

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caccugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagguca ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO38046

<400> 111792
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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO38068

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABO38079

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABO38090

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABO38233

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neuraminidase__InfluenzaA__ABO38244

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111801
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<212> RNA
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neuraminidase__InfluenzaA__ABO38288

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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neuraminidase__InfluenzaA__ABO38299

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ugcuucauca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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<220>
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neuraminidase__InfluenzaA__ABO38310

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABO38343

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg ccaggacacc 240

accuccguca uccucaccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABO38376

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ggcucccaga accacaccgg caccugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aaggagaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cggcggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg ccaggacacc 240

accuccguca uccucaccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

gaggccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagaagaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccuc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

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cgcaccaagu ccaccuccuc ccgccacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg acugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 111810
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<212> RNA

<213> Artificial Sequence

<220>
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc aacuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111811
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO38420

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcuccug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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<220>
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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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<210> 111815
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<220>
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neuraminidase__InfluenzaA__ABO44060

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<210> 111816
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neuraminidase__InfluenzaA__ABO44071

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111817
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<220>
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neuraminidase__InfluenzaA__ABO44082

<400> 111817
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111818
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO44093

<400> 111818
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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccguccucg acaucuccau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc caaggaccuc cgcuccggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO44104

<400> 111819
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

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uacccccgcu accccgacgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac cgcuccucca acuccaacug ccgcaacccc 1020

aacaacgaga agggcaacca gggcgucaag ggcugggccu ucgacaacgg cgacgacguc 1080

uggaugggcc gcaccaucuc caaggaccuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 111820
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO44126

<400> 111820
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acgccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucaccguc 1020

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cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111821
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABO52228

<400> 111821
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111822
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABO52239

<400> 111822
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ugcuucauca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gccgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc ccccaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111823
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO52250

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 111824
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO52261

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111825
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABO52283

<400> 111825
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaug uga 1413

<210> 111826
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABO52294

<400> 111826
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<210> 111827
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gagugcgacu cccccgccaa caaccagauc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cuggucccag 660

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<212> RNA
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neuraminidase__InfluenzaA__ABO52327

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111829
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO52338

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<210> 111830
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABO52349

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111831
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<212> RNA
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<220>

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<400> 111831

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111832

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggcaag cucgucgacu ccaucggcuc cugguccccag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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neuraminidase__InfluenzaA__ABP49220

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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neuraminidase__InfluenzaA__ABP49319

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111836
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABP49330

<400> 111836
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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caagggcacc 240

acccccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccugcgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

gaggccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagaagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucuacguc 1020

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cgcaucaagu ccaacuccuc ccgccagggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg acugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 111837
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABP49352

<400> 111837
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguсc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111838
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49363

<400> 111838
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111839
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49374

<400> 111839
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111840
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49385

<400> 111840
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aaccucaccc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111841
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49396

<400> 111841

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111842
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaucug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111843
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49418

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111844
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABP49429

<400> 111844
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111845
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABP49440

<400> 111845
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ugcuuccuca uccagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcgucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111846
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABP49451

<400> 111846
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111847
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49462

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ugcuucauca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gccgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc accaagcagg ucugcgucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acaucgagga gugcuccugc 840

uacccccgcu accccgacgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucaa caaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagucc caggucaacc gccaggucau cgucgacaac 1200

aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111848
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABP49473

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acaucgagga gugcuccugc 840

uacccccgcu accccgacgu ccgcugcauc ugccgcgaca acuggaaggg cuccaaccgc 900

cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc ccccaggaga cccgcgucug guggaccucc 1320

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111849
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABP49495

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111850
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABP49506

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABQ01325

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1410
<212> RNA
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<400> 111854
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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111855
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111856
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<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 111857
<211> 1410
<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 111858
<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111859
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ABQ44441

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<212> RNA

<213> Artificial Sequence

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

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<210> 111865
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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 111866
<211> 1413
<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111867
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABR15910

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111868
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABR15932

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ABR28518

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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neuraminidase__InfluenzaA__ABR28595

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111875
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABR28771

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111876
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<220>
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neuraminidase__InfluenzaA__ABR28782

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABR28793

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111878
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABR28804

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABR28826

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgucgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<210> 111883
<211> 1410
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABR28903

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagguccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABS49902

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccaccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 111894
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 111894
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<210> 111895
<211> 1413
<212> RNA
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<220>
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<400> 111895

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca uccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__ABS50012

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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ugcuuccuca ugcagaucgc cguccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111899
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<210> 111900
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111901
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABS50056

<400> 111901
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111902
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS50067

<400> 111902
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111903
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS50078

<400> 111903
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111904
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71644

<400> 111904
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gaguccccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaugggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111905
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71646

<400> 111905
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gaguccccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111906
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71647

<400> 111906
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gagucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaugggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcgccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111907
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71648

<400> 111907
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111908
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71649

<400> 111908
augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111909
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71651

<400> 111909
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggcucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccaacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111910
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71652

<400> 111910
augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccuccu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccaacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111911
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71653

<400> 111911
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugauc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagucccg cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaucggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccgcc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111912
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71655

<400> 111912
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111913
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71657

<400> 111913
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111914
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71659

<400> 111914
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccacau gcccaucuga 1410

<210> 111915
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71660

<400> 111915
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111916
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71661

<400> 111916
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111917
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71662

<400> 111917
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111918
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABS71663

<400> 111918
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111919
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU40956

<400> 111919
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucaucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111920
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU50651

<400> 111920
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111921
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU80180

<400> 111921
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccuuccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111922
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU80301

<400> 111922
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111923
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU80312

<400> 111923
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 111924
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU80323

<400> 111924
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111925
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU80334

<400> 111925
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagacccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucaucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111926
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92762

<400> 111926
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111927
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92764

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau cauggagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaacg ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcaag aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111928
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABU92765

<400> 111928
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111929
<211> 1410

<212> RNA
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neuraminidase__InfluenzaA__ABU92766

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111930
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92767

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111931
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92768

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111932
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92769

<400> 111932
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111933
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92770

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111934
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92771

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaccgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABU92775

<400> 111938
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111939
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABU92777

<400> 111939

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111940

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92778

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111941
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92779

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111942
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92780

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111943
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92781

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111944
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92782

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111945
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92783

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111946
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92784

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92785

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111948
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92786

<400> 111948
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111949
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92787

<400> 111949

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111950
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABU92789

<400> 111950
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111951
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92790

<400> 111951
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111952
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92791

<400> 111952
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111953
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92792

<400> 111953
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gucuucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111954
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92793

<400> 111954
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111955
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92794

<400> 111955
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111956
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92795

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111957
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92796

<400> 111957
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111958
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92797

<400> 111958
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

cgcauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111959
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92798

<400> 111959
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111960
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92799

<400> 111960
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABU92800

<400> 111961
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111962
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92801

<400> 111962
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucca ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111963
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92802

<400> 111963
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111964
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92804

<400> 111964
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111965
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92805

<400> 111965
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111966
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92806

<400> 111966
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111967
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92808

<400> 111967
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111968
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92809

<400> 111968
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111969
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92810

<400> 111969
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111970
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92811

<400> 111970
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau gaucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc gucggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111971
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92814

<400> 111971
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111972
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92815

<400> 111972
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111973
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92816

<400> 111973
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111974
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92817

<400> 111974
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111975
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92818

<400> 111975
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111976
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92819

<400> 111976
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111977
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92821

<400> 111977
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111978
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92822

<400> 111978
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111979
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92823

<400> 111979
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111980
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92824

<400> 111980
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg ccgcaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111981
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92825

<400> 111981
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111982
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABU92826

<400> 111982
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111983
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92827

<400> 111983
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111984
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92828

<400> 111984
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111985
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92829

<400> 111985
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111986
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92830

<400> 111986
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111987
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92831

<400> 111987
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111988
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92832

<400> 111988
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccgccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111989
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92833

<400> 111989
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111990
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92834

<400> 111990
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ugcuuccuca ugcacaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucucccucau gcccaucuga 1410

<210> 111991
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92835

<400> 111991
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111992
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92836

<400> 111992
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111993
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABU92837

<400> 111993

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111994

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92838

<400> 111994
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111995
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92839

<400> 111995
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111996
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92840

<400> 111996
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111997
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92841

<400> 111997
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111998
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92842

<400> 111998
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gacugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 111999
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92843

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112000
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92844

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112001
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92845

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112002
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92846

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112003
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92847

<400> 112003

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112006
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABU92851

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112013
<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112015
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<212> RNA
<213> Artificial Sequence

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccggcu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92861

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

ucccgcgaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

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cucgucggcg acaccccccg caagaacgac uccuccucca acucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92867

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112024
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92869

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92870

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112026
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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92872

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac aacaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112027
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABU92873

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaacaucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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neuraminidase__InfluenzaA__ABU92876

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ABU92877

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac aacaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ABU92881

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112036
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABU92882

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112037
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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa gaaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112038
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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112039
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neuraminidase__InfluenzaA__ABU92885

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112040
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92887

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagcucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112061
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABU92908

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112062
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112064
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABU92911

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

caggccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ABV29560

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABV29571

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV29582

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112069
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV29615

<400> 112069
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112070
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV29637

<400> 112070
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucuc cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112071
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29648

<400> 112071
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112072
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29659

<400> 112072
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29670

<400> 112073
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112074
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29681

<400> 112074
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcaucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112075
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ABV29692

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112076
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV29703

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112077
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29714

<400> 112077
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcgaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112078
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV29725

<400> 112078
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagggc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112079
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29736

<400> 112079
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112080
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29747

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccguccgc caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112081
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29769

<400> 112081
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112082
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29780

<400> 112082
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccuccaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112083
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29791

<400> 112083
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112084
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29802

<400> 112084
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112085
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV29824

<400> 112085
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112086
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29835

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV29846

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV29879

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112089
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29890

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV29901

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112091
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29912

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc aucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacaag 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV29923

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABV29934

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABV29945

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABV29956

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV29989

<400> 112096
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112097
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 112098
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30011

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112099
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30022

<400> 112099
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112100
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30044

<400> 112100
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccggca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABV30055

<400> 112101

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112102

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30077

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 112103
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<220>
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neuraminidase__InfluenzaA__ABV30088

<400> 112103
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ABV30099

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112105
<211> 1413
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<220>
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neuraminidase__InfluenzaA__ABV30110

<400> 112105
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABV30132

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112107
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV30143

<400> 112107
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112108
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV30154

<400> 112108
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112109
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30165

<400> 112109
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caaccucucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112110
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30187

<400> 112110
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112111
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30198

<400> 112111

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112112
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABV30209

<400> 112112

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112113
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30220

<400> 112113
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30231

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30264

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg aggucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112116
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30275

<400> 112116
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccacccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112117
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30297

<400> 112117
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112118
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV30308

<400> 112118
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcc ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112119
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30319

<400> 112119
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ucccucaugc uccagaucgg caacaucguc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112120
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<220>
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neuraminidase__InfluenzaA__ABV30330

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112121
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30341

<400> 112121
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABV30363

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
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<220>
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neuraminidase__InfluenzaA__ABV30374

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112124
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30385

<400> 112124
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112125
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30396

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucuccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112126
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABV30407

<400> 112126
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112127
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV30418

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<210> 112128
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30429

<400> 112128
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABV30440

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30451

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30462

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 112132
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABV30473

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABV30484

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABV30506

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV30539

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABV30561

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABV30572

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABV30583

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABV30594

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgucgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV30616

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__ABV30627

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112146
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABV30660

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABV45852

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABV45874

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ABV45885

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABV45896

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABV45918

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112154
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neuraminidase__InfluenzaA__ABV45929

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ucccucaugc uccagaucgg caacaucauc uccauguggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112155
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABV45940

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca uccgcuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112156

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABV45951

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112157
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neuraminidase__InfluenzaA__ABV45973

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112158
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<220>
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neuraminidase__InfluenzaA__ABV45984

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABV82554

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36171

<400> 112162
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112163
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36193

<400> 112163
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcc ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112164
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36204

<400> 112164
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112165
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36215

<400> 112165

augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaac 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggccgcggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acucccacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caucaagccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucau caucgacaag uga 1413

<210> 112166
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABW36226

<400> 112166
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112167
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36237

<400> 112167
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112168
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36248

<400> 112168
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112169
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36259

<400> 112169
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

guccucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucucc uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112170
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36281

<400> 112170
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112171
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW36292

<400> 112171
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112172
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW36303

<400> 112172
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acaacgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112173
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW36314

<400> 112173
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaacguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112174
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW38366

<400> 112174
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgccuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112175
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW39780

<400> 112175
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaac 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caucaagccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucau caucgacaag uga 1413

<210> 112176
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABW39809

<400> 112176
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccucguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112177
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABW39820

<400> 112177

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acaacgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112178
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW39831

<400> 112178
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112179
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW39842

<400> 112179
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112180
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW39864

<400> 112180
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABW39875

<400> 112181
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112182
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW39886

<400> 112182
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

cgcaaccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112183
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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<400> 112183
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112184
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<220>
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neuraminidase__InfluenzaA__ABW39908

<400> 112184
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112185
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW39930

<400> 112185
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112186
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW39952

<400> 112186
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caugugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112187
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW39963

<400> 112187
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABW39985

<400> 112188
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112189
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW39996

<400> 112189
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<400> 112190
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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<220>
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<400> 112193
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABW40051

<400> 112194
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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<400> 112195
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<210> 112201
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<400> 112201
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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<400> 112202
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40161

<400> 112203
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW40172

<400> 112204
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40183

<400> 112205
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40194

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ABW40205

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ABW40216

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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<400> 112209

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112210

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40238

<400> 112210
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112211
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40249

<400> 112211
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112212
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40260

<400> 112212
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112213
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40271

<400> 112213
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagc accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112214
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40282

<400> 112214
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112215
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40293

<400> 112215
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112216
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40304

<400> 112216
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112217
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40315

<400> 112217
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112218
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40326

<400> 112218
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112219
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW40337

<400> 112219

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112220
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112221
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40370

<400> 112221
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112222
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40403

<400> 112222
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112223
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40414

<400> 112223
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112224
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40425

<400> 112224
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112225
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40436

<400> 112225
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112226
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40447

<400> 112226
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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<210> 112227
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<212> RNA
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neuraminidase__InfluenzaA__ABW40458

<400> 112227
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW40469

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112229
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40491

<400> 112229
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112230
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112232
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40524

<400> 112232
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112233
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40546

<400> 112233
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABW40557

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW40568

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABW40579

<400> 112236
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ABW40601

<400> 112237
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112238
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112239
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<212> RNA
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112240
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40634

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112241
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40645

<400> 112241
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW40656

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ABW40667

<400> 112243
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABW71308

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ABW71319

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112249
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW71341

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABW71352

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABW71363

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW71374

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ABW71385

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112257
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW71440

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112258
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW71451

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112259
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW71462

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW80980

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112261
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW80981

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABW81474

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ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacuucaac aacaccaacg ucgucgccgg caaggacaag 240

cccuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

uccuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABW81477

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ABW81478

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaaga acaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW81479

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ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

cccuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112268
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

cccuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

cccuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguсc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW81483

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW81484

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caagggcaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABW81487

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucau ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ABW81488

<400> 112273

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ABW81490

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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<212> RNA
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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccugggag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccugggag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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ggcucccaga accacaccgg caucugcaac cagaagauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ABW86412

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucgcc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ABW86434

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW86467

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW86478

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112304
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW86522

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112305
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112306
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ABW86544

<400> 112306
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112307
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW86555

<400> 112307
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112308
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW86566

<400> 112308
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccgu caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ABW86609

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91188

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91210

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gaguucaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112312
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91221

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112313
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91232

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg aguccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112314
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<220>
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neuraminidase__InfluenzaA__ABW91243

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112315
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91254

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112316
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91265

<400> 112316
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112317
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ABW91276

<400> 112317

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112318

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91287

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112319
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91298

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112320
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neuraminidase__InfluenzaA__ABW91309

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 112321
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91320

<400> 112321
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112322
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<220>
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neuraminidase__InfluenzaA__ABW91331

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112323
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW91342

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112324
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW91353

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112325
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91364

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112326
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91375

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112327
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABW91386

<400> 112327

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112328
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc aucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ABW91408

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 112330
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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<210> 112331
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<212> RNA
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neuraminidase__InfluenzaA__ABW91430

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcuccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112332
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91441

<400> 112332
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112333
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91452

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112334
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91463

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112335
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91474

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112336
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABW91485

<400> 112336
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112337
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABW91496

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112338
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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<400> 112339

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112340
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ABW91529

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112341
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neuraminidase__InfluenzaA__ABW91540

<400> 112341
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

uggaugaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gaguucaacu ucccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABW91584

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABW91595

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABW91606

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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<212> RNA

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neuraminidase__InfluenzaA__ABW91650

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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neuraminidase__InfluenzaA__ABX58253

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaac 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABX58264

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ABX58275

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABX58297

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ggcucccaga accacaccgg caucugcaac cagaagauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuccucca ucuccuucug cggcgucgac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112360
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<220>
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neuraminidase__InfluenzaA__ABX58319

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112361
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABX58352

<400> 112361
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcaucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112362
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABX58363

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABX58385

<400> 112363
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112364
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58396

<400> 112364
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112365
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABX58407

<400> 112365
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABX58418

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ABX58429

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112368
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58440

<400> 112368
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112369
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58451

<400> 112369
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112370
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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 112371
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABX58473

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112372
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABX58484

<400> 112372
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58495

<400> 112373
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaaccg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112374
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58506

<400> 112374
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112375
<211> 1413
<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112376
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58539

<400> 112376
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ABX58550

<400> 112377
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac cgucgacaag uga 1413

<210> 112378
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58561

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABX58572

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112380
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58583

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112381
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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112382
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABX58605

<400> 112382
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccagg ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacaagcu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ABX58627

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ABX58682

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ABX58693

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaac 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcaaccaga accaggucga gcccaucauc aacaccaacu uccucaccgg caaggccguc 180

gccuccauca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 112391
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<220>
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ggcaaccaga accaggucga gcccaucauc aacaccaacu uccucaccgg caaggccguc 180

gccuccauca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

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<400> 112392
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<400> 112393

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABY51053

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ABY51064

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaac 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ABY51075

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ABY51086

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112399
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABY51097

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112400
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABY51108

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112401
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABY51119

<400> 112401
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112402
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ABY51130

<400> 112402
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112403
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABY51141

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ABY51152

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112405
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca uccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112406
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ABY51174

<400> 112406
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112407
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<212> RNA
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neuraminidase__InfluenzaA__ABY51185

<400> 112407
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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug guccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ACA33540

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ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gagugcucca ucuccgccaa cucccagguc guccccugcg agcccaccac cgagaaggag 180

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uucgcccccu ucuccaagga caacuccauc cgccucuccg ccggcggcga caucuggauc 300

acccgcgagc ccuacgucuc cugcgacacc uccaagugcu accaguucgc ccucggccag 360

ggcaccaccc ucgacaacga gcacuccaac ggcaccaucc acgaccgcau cccccaccgc 420

acccuccuca ugaacgagcu cggcgucccc uuccaccucg gcacccgcca ggucugcauc 480

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gacgaccgca acgccaccgc cuccuucauc uacaacggca ugcucgucga cuccaucggc 600

uccugguccc agaacauccu ccgcacccag gaguccgagu gcgucugcau caacggcucc 660

ugcaccgucg ucaugaccga cggcuccgcc uccggcaagg ccgacacccg cauccucuuc 720

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gucugcuccg gccucgucgg cgacaccccc cgcaacgagg acuccuccuc cuccuccaac 960

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ugcaucaacc gcugcuucua cgucgagcuc auccgcggcc gccccaagga gacccgcguc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACD11077

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggucacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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neuraminidase__InfluenzaA__ACD56116

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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<210> 112437
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<400> 112437

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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<220>
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neuraminidase__InfluenzaA__ACD56283

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ACD56305

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ACD56316

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucauggacu ccaucggcuc cugguccccag 660

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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neuraminidase__InfluenzaA__ACD85498

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACD85520

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__ACD85575

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__ACD85586

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__ACF22334

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neuraminidase__InfluenzaA__ACF22367

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucauggacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ACF33785

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACF41672

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccgcgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<210> 112503
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<212> RNA
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<220>

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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<220>
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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<220>
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ugcuucuuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACF54535

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACF54557

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACF54568

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACF54601

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ggcaaccaga accacaccgg caucugcaac cagggcucca ucaccuacaa ggucgucgcc 180

ggccaggacu ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucc acuccaagga caacggcauc cgcaucggcu ccaagggcga cgucuucguc 300

auccgcgagc ccuucaucuc cugcucccac cucgagugcc gcaccuucuu ccucacccag 360

ggcgcccucc ucaacgacaa gcacucccgc ggcaccuuca aggaccgcuc ccccuaccgc 420

gcccucaugu ccugccccgu cggcgaggcc cccucccccu acaacucccg cuucgagucc 480

gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgacg acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaacau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacaa gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ccgacggcgc caacggcguc aagggcuucu ccuacaagua cggcaacggc 1020

gucuggaucg gccgcaccaa guccgacucc ucccgccacg gcuucgagau gaucugggac 1080

cccaacggcu ggaccgagac cgacucccgc uucuccaugc gccaggacgu cgucgccaug 1140

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uggcccgacg gcgccgagcu ccccuucacc aucgacaagu ga 1362

<210> 112511
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG50700

<400> 112511
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccccc cucugcccca ucuccggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acgccuccga ggucaccugc gucugccgcg acaacuggca cggcuccaac 840

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gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuccacc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggacuc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112512
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG70145

<400> 112512
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112513
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG70156

<400> 112513
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112514
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80407

<400> 112514
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccaagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccgcccgc ggccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcgaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112515
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80411

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112516
<211> 1407
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80421

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aacaacgucc acuccgacac cgcccgcgac cgcacccccu accgcacccu ccucaugaac 480

gagcucggcg uccccuucca ccucggcacc aagcaggucu gcaucgccug guccuccucc 540

uccugccacg acggcaaggc cuggcuccac gucugcauca ccggcgacga caagaacgcc 600

accgccuccu ucaucuacaa cggccgccuc gucgacuccg ucgucuccug guccaaggag 660

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ccccgcuacc ccggcguccg cugcgucugc cgcgacaacu ggaagggcuc caaccgcccc 900

aucgucgaca ucaacaucaa ggaccacucc aucgucuccu ccuacgucug cuccggccuc 960

gucggcgaca ccccccgcaa gaacgacucc uccuccuccu cccacugccu cgaccccaac 1020

aacgaggagg gcggccacgg cgucaagggc ugggccuucg acgacggcaa cgacgucugg 1080

augggccgca ccaucuccga gaagucccgc cucggcuacg agaccuucaa ggucaucgag 1140

ggcuggucca accccaaguc caagcuccag aucaaccgcc aggucaucgu cgaccgcggc 1200

aaccgcuccg gcuacuccgg caucuucucc gucgagggca aguccugcau caaccgcugc 1260

uucuacgucg agcucauccg cggccgcaag gaggagaccg agguccucug gaccuccaac 1320

uccaucgucg ucuucugcgg caccuccggc accuacggca ccggcuccug gcccgacggc 1380

gccgacauca accucaugcc caucuga 1407

<210> 112517
<211> 1407
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80427

<400> 112517
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccgacac cgcccgcgac cgcacccccu accgcacccu ccucaugaac 480

gagcucggcg uccccuucca ccucggcacc aagcaggucu gcaucgccug guccuccucc 540

uccugccacg acggcaaggc cuggcuccac gucugcauca ccggcgacga caagaacgcc 600

accgccuccu ucaucuacaa cggccgccuc gucgacuccg ucgucuccug guccaaggag 660

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ccccgcuacc ccggcguccg cugcgucugc cgcgacaacu ggaagggcuc caaccgcccc 900

aucgucgaca ucaacaucaa ggaccacucc aucgucuccu ccuacgucug cuccggccuc 960

gucggcgaca ccccccgcaa gaacgacucc uccuccuccu cccacugccu cgaccccaac 1020

aacgaggagg gcggccacgg cgucaagggc ugggccuucg acgacggcaa cgacgucugg 1080

augggccgca ccaucuccga gaagucccgc cucggcuacg agaccuucaa ggucaucgag 1140

ggcuggucca accccaaguc caagcuccag aucaaccgcc aggucaucgu cgaccgcggc 1200

aaccgcuccg gcuacuccgg caucuucucc gucgagggca aguccugcau caaccgcugc 1260

uucuacgucg agcucauccg cggccgcaag gaggagaccg agguccucug gaccuccaac 1320

uccaucgucg ucuucugcgg caccuccggc accuacggca ccggcuccug gcccgacggc 1380

gccgacauca accucaugcc caucuga 1407

<210> 112518
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80437

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112519
<211> 1407
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACG80446

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccgacac cgcccgcgac cgcacccccu accgcacccu ccucaugaac 480

gagcucggcg uccccuucca ccucggcacc aagcaggucu gcaucgccug guccuccucc 540

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aacgaggagg gcggccacgg cgucaagggc ugggccuucg acgacggcaa cgacgucugg 1080

augggccgca ccaucuccga gaagucccgc cucggcuacg agaccuucaa ggucaucgag 1140

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aaccgcuccg gcuacuccgg caucuucucc gucgagggca aguccugcau caaccgcugc 1260

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gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccgacac cgcccgcgac cgcacccccu accgcacccu ccucaugaac 480

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uccugccacg acggcaaggc cuggcuccac gucugcauca ccggcgacga caagaacgcc 600

accgccuccu ucaucuacaa cggccgccuc gucgacuccg ucgucuccug guccaaggag 660

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augggccgca ccaucuccga gaagucccgc cucggcuacg agaccuucaa ggucaucgag 1140

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACI22525

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112530
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI22526

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112531
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI22527

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI22528

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ACI22529

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112534
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI22530

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ACI22532

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112536
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI22533

<400> 112536
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112537
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI22534

<400> 112537
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguсc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112538
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI25727

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gagugcaacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaacuucau gcccaucuga 1410

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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ggcgccaaca ucaacuucau gcacaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcacaucuga 1410

<210> 112541
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI25771

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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ggcgccaaca ucaacuucau gcacaucuga 1410

<210> 112542
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<212> RNA
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neuraminidase__InfluenzaA__ACI25782

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ACI25793

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccguc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cuggucccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACI25804

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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neuraminidase__InfluenzaA__ACI26277

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI26299

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaccgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112548

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI26354

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI26376

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACI26387

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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<220>
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neuraminidase__InfluenzaA__ACI26420

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ACI26431

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ACI26442

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ACI26453

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<210> 112556
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neuraminidase__InfluenzaA__ACI26464

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<400> 112557

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaccgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112558
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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACI26508

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112561
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<220>
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neuraminidase__InfluenzaA__ACI26519

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACI26530

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACI26552

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACI26574

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aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACI26585

<400> 112566
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacguccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112567
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI32764

<400> 112567
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112568
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32765

<400> 112568
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgcccg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuuca ugacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112569
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32766

<400> 112569
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112570
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI32767

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cacccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112571
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI32768

<400> 112571
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112572
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI32769

<400> 112572
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

aucuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ACI32770

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI32771

<400> 112574
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacaa gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caagggcaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112575
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<212> RNA
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neuraminidase__InfluenzaA__ACI32772

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112576
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32773

<400> 112576
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112577
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI32774

<400> 112577
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112578
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32775

<400> 112578
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112579
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32776

<400> 112579
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacaa gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112580
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32777

<400> 112580
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacaa gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucgc caucgacaag uga 1413

<210> 112581
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32778

<400> 112581
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112582
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACI32779

<400> 112582
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112583
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32780

<400> 112583
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112584
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32781

<400> 112584
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112585
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<220>
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neuraminidase__InfluenzaA__ACI32782

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaaggcca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112586
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32783

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggc ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucaucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112587
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<212> RNA
<213> Artificial Sequence

<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaaggcca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112588
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACI32785

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caugugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ACI32787

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACI32788

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ggcucccaga accacaccgg caccugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccugcgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caagggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc caugaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACI32791

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ACI32793

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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neuraminidase__InfluenzaA__ACI32794

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112596
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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ACI32797

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcucca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ACI32798

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACI32803

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACJ53848

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ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112614
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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcucccc cgucuccccc 960

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accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112615
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACJ53853

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112616
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<212> RNA
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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112617
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACJ53867

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ucccucaugc uccagaucgg caacaugauc ucccucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112618
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACJ53875

<400> 112618
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 112619
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACJ53876

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 112620
<211> 1404
<212> RNA
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<220>
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ugccucauca ugcagaucgc cguccucgcc accaccauga cccuccacuu caacgagugc 120

accaaccccu ccaacaacca ggccaugccc ugcgagccca ucaucaucga gcgcaacaug 180

accgagaucg uccaccucaa caacaccacc aucgagaagg aguccugccc caaggucgcc 240

gaguacaaga acugguccaa gccccagugc cagaucaccg gcuucgcccc cuucuccaag 300

gacaacucca uccgccucuc cgccggcggc gacaucuggg ucacccgcga gcccuacguc 360

uccugcggcc ucggcaacug cuaccaguuc gcccucggcc agggcaccac ccucaacaac 420

aagcacucca acgacaccau ccacgaccgc uccccccacc gcacccuccu caugaacgag 480

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ugguccggcu acuccggcau cuucuccguc gagggcaaga ccugcaucaa ccgcugcuuc 1260

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aucaucgucu ucugcggcac cuccggcacc uacggcaccg gcuccuggcc cgacggcgcc 1380

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<210> 112621
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACK99424

<400> 112621
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gagugcuccu cccccccaa caaccagguc auccccugcc agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACK99435

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112623
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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<210> 112624
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<212> RNA
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112625
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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacuccuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 112626
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<212> RNA

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<220>
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neuraminidase__InfluenzaA__ACK99479

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ACL12066

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112628
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACL12132

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ACL12154

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACL12165

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 112631
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ACL12176

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gaguucaacu ccacccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACL12264

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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gccaccgccu ccuucaucua cgacggccgc cucauggacu ccaucggcuc cugguccccag 660

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACN32807

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcc ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACN32829

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACN32840

<400> 112645
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACN32851

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112647
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACN32862

<400> 112647

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112648

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACN32873

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ACN32884

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACN32895

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugca agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ACN33016

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACN33049

<400> 112661
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112662
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACN33060

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ACN33082

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112664
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACN33093

<400> 112664
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112665
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACN33104

<400> 112665
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ACN33115

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ACN33126

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg cuccuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ACN33148

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaucuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaacaacu ucgucgccga gcagaccguc 240

gucccguca agcucgucgg cuccuccccc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg cuccuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacgac aucaucaccg acaccaucaa guccuggaag 660

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu ccucccccaa caaccagguc augcagugcg agcccaccau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO36466

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgccua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO36477

<400> 112699
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112700
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO36499

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112701
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACO36510

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112702

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO36543

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112703
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO36554

<400> 112703
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO36565

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112705
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO36576

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ACO36587

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACO36620

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACO36653

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<400> 112711

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACO94512

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaga ucaaccucau gcccaucuga 1410

<210> 112719
<211> 1410
<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<210> 112720
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<212> RNA
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<210> 112721
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<212> RNA
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neuraminidase__InfluenzaA__ACO94719

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaga ucaaccucau gcccaucuga 1410

<210> 112722
<211> 1410
<212> RNA
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<220>
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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACO94763

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO94774

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO94785

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gaguucaacu cccccccaa caaccagguc augcucugca agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACO94796

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112728
<211> 1410
<212> RNA
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<220>
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ggcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO94829

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 112730
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO94840

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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ggcgucugga ucggccgcac caagucccac uccucccgcc acggcuucga gaugaucugg 1080

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augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 112731
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO94851

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACO94873

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO94884

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO94906

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112737
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagcu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95196

<400> 112744
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112745
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

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<400> 112745

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112746

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO95218

<400> 112746
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112747
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO95229

<400> 112747
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112748
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO95240

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112749
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO95262

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112750
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACO95273

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<210> 112751
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95306

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 112752
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95385

<400> 112752
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112753
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO95407

<400> 112753
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112754
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95418

<400> 112754
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112755
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 112755

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112756
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112757
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO95462

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcucaucuga 1410

<210> 112758
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO95484

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112759
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95506

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112761
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACO95517

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 112762
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACO95539

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACP20223

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<210> 112764
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACP41952

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 112765
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACP44158

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 112766
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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACP44195

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112767
<211> 1413
<212> RNA
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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACP44228

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACP44239

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACP44261

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACP44272

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uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACQ63253

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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accuccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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neuraminidase__InfluenzaA__ACQ99824

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ggcgagaagu cccaccccaa ggucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agcucuucaa gauggagaag 780

ggcaagauca ucaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112831
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 112832
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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ACR08432

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ACR08452

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACR08565

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACR08566

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACR08567

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 112843
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 112851
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR09381

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 112852
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACR09383

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 112854

<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ACR09384

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACR09386

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACR10226

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ACR10236

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 112860
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR10237

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112861
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15186

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaagug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112862
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15197

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112863
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACR15208

<400> 112863

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ACR15241

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15252

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR15263

<400> 112867
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112868
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACR15274

<400> 112868
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112869
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACR15307

<400> 112869
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112870
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACR15318

<400> 112870
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

cgccagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112871
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR15329

<400> 112871
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

cgcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112872
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR15340

<400> 112872
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112873
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15362

<400> 112873
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112874
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15373

<400> 112874
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112875
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR15428

<400> 112875
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucaccaaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 112876
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR15472

<400> 112876
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucgccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 112881
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR15538

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112907
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<220>

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112908

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 112915
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 112916
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112917
<211> 1410
<212> RNA
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<220>
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<400> 112917

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 112918
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112919
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<212> RNA
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neuraminidase__InfluenzaA__ACR40301

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACR40351

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACR46663

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112934
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112936
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<212> RNA
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neuraminidase__InfluenzaA__ACR47003

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112937
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<212> RNA
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neuraminidase__InfluenzaA__ACR47008

<400> 112937
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 112938
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR49267

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 112939
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<212> RNA
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neuraminidase__InfluenzaA__ACR49268

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112940
<211> 1410
<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ACR49269

<400> 112940
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACR49270

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR49271

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACR51048

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACR51068

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACR52371

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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neuraminidase__InfluenzaA__ACR52381

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ACR52401

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<400> 112971

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112972
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR54052

<400> 112972
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112973
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR54966

<400> 112973
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112974
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 112974
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACR54986

<400> 112975
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 112976
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<212> RNA
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neuraminidase__InfluenzaA__ACR54996

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACR56383

<400> 112978
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACR56393

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACR56403

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112981
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neuraminidase__InfluenzaA__ACR56413

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112982
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112983
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR56433

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112984
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACR56443

<400> 112984
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112985
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 112986
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<220>
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neuraminidase__InfluenzaA__ACR58555

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACR61691

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ACR67201

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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neuraminidase__InfluenzaA__ACR67256

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACR77461

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACR77501

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACR83539

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ACS14669

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACS14679

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACS14689

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACS14699

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACS14729

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACS27192

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACS27202

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACS27222

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACS27232

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACS27242

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACS27771

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ACS34971

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ACS34972

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACS50094

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACS54264

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACS54265

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACS75824

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACS77939

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACS77949

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACS77999

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACS88275

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113050
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACS92572

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACS92592

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACS92614

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACT10315

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113058
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT11059

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113059
<211> 1350

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15313

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 113060
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<220>
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neuraminidase__InfluenzaA__ACT15315

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau gcgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113061
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15319

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113062
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACT15321

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gcgcgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15323

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113064
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<212> RNA
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neuraminidase__InfluenzaA__ACT15325

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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gccgagcucc ccuucaccau cgacaaguga 1350

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neuraminidase__InfluenzaA__ACT15327

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccgcu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 113066
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neuraminidase__InfluenzaA__ACT15331

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuucccc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

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accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113067
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15333

<400> 113067
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccagggcga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113068
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACT15335

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccgcu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113069
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACT15337

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccgucac cgacuggucc 1140

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113070
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACT15341

<400> 113070
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113071
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACT15344

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

uccaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacugguc 1140

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113072
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15346

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acaacauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15348

<400> 113073
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccagggcga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113074
<211> 1350
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT15350

<400> 113074
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccgcu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113075
<211> 1350
<212> RNA
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neuraminidase__InfluenzaA__ACT15352

<400> 113075
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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accggcaccg acuccuccuu cuccggcaag caggacaucg ucgccaucac cgacuggucc 1140

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 113076
<211> 1350
<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ACT15354

<400> 113076
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ucccucaugc uccagaucgg caacaugauc uccaucugga ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 113077
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<212> RNA
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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 113078
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<212> RNA
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ggcaaccgcu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccacgg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

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<210> 113079
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT21515

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 113080
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT21516

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgccua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 113081
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccgagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACT22011

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT22013

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACT22014

<400> 113087

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113088
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113089
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<220>
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neuraminidase__InfluenzaA__ACT22016

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT22017

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113091
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neuraminidase__InfluenzaA__ACT22018

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACT22506

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT22511

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT33121

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT33124

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113096
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113099
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT36672

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACT36673

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT36675

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT36677

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgcccg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT36679

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113106
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113107
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT36682

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113108
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<212> RNA
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neuraminidase__InfluenzaA__ACT36683

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113109
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT36685

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113111
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT36686

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT36687

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113113
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACT36689

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113115
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<212> RNA
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neuraminidase__InfluenzaA__ACT36690

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113116
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT36691

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113117
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113118
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<212> RNA
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neuraminidase__InfluenzaA__ACT36694

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT36695

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACT52684

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACT54608

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT66157

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACT67117

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113124
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<212> RNA
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neuraminidase__InfluenzaA__ACT67121

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113125
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<212> RNA
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neuraminidase__InfluenzaA__ACT67240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113126
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACT67241

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACT67243

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT67256

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACT68161

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aaggccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACT68162

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT68164

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT68166

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACT68169

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacga gaccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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neuraminidase__InfluenzaA__ACT68177

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccuccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACT79165

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACT79185

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACT83868

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACT83878

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACT86002

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACT86012

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113165
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT86022

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113166
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ACT86032

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113167
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT86042

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113168
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ACT86052

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT86062

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113170
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT86072

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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<220>
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neuraminidase__InfluenzaA__ACT86082

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113174
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACT86112

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113175
<211> 1410

<212> RNA
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neuraminidase__InfluenzaA__ACT86122

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113176
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neuraminidase__InfluenzaA__ACT86132

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT86142

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACT97323

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACU00934

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACU00944

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACU00954

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113182
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU12497

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agcgcgagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugccgcg ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113183
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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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<210> 113184
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<220>
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neuraminidase__InfluenzaA__ACU12519

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113185
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACU12530

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcaa cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 113186

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<220>
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neuraminidase__InfluenzaA__ACU12541

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU12552

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__ACU12574

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__ACU12585

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ACU12596

<400> 113190
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

aaguccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU13077

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU13079

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113196
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACU13083

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACU13084

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACU16799

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ACU17130

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACU17191

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113205
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<220>
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neuraminidase__InfluenzaA__ACU17262

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113206
<211> 1410
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACU17393

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113208
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neuraminidase__InfluenzaA__ACU17454

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113209
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neuraminidase__InfluenzaA__ACU17524

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113211
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<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca ccuucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca ccuucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACU29971

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACU29991

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACU30001

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucauggg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU31177

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACU31178

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACU31180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU31181

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACU31188

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccagc acaaggccga gcccaucucc aacaccaacc uccucaccga gaagaccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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ggccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguacgu cgccuggucc 480

gccuccgccu gccacgaccg caccucccgc cucaccaucg gcaucuccgg ccccgacaac 540

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcgagaagu cccaccccaa ggucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agcucuucaa gauggagaag 780

ggcaagauca uccgcuccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACU80094

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ACU80105

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113259
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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU80160

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113261
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACU80171

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113262

<211> 1410
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<220>
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neuraminidase__InfluenzaA__ACU80182

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ACU80193

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACU80204

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACU80237

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ggcaaccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ACU80281

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ACU80303

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU80314

<400> 113271

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU80413

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACU80427

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ACU80461

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ACU80603

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaagau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACU80757

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg aggucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACU80768

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ACU80779

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACU87273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ACV04231

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113306
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04241

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV04251

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACV04261

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ACV04271

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV04281

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucggc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ACV04301

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV04321

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113314
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04331

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113315
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACV04341

<400> 113315

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113316

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04351

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113317
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV04361

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113318
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV04371

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04381

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACV04391

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ACV04401

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV04411

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACV04492

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113325
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACV04512

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113326
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04522

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg caaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113327
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV04532

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113328
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV04542

<400> 113328
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113329
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV04552

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV04562

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113331
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV04582

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACV04758

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113334
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV33087

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113335
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV33107

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113336
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113337
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACV33127

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV33137

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACV33147

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113340
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<220>
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neuraminidase__InfluenzaA__ACV33157

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccgucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV33167

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV42020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgaca acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaagau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

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aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

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gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

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aaguccuggc gcaagaagau ccuccgcacc caggaguccg agugcgccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ccgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcucg acgcccccaa cucccacuac 780

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aucugcuccg gcgucuucgg cgacaccccc cgccccaagg acggcaccgg cuccugcggc 960

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<212> RNA
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neuraminidase__InfluenzaA__ACV49570

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cucaaguaca acggcaucau caccgagacc aucaaguccu ggcgcaagga gauccuccgc 660

acccaggagu ccgagugcgu cugcgucaac ggcuccugcu ucaccaucau gaccgacggc 720

cccuccggcg gccccgccuc cuacaagauc uucaagaucg agaagggcaa ggucaccaag 780

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcgucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

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<220>
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACV49669

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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__ACV49679

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACV53442

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV53452

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACV53462

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV53472

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccagcccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113380
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113381
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<212> RNA
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neuraminidase__InfluenzaA__ACV67182

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV67188

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV67205

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV67207

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV67210

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACV67211

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ACV70076

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucaccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70116

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70227

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV70247

<400> 113423

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV70257

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACV70337

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV70367

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACV70377

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70387

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70427

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70437

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ACV70837

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACV70847

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucauguccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ACV70867

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACV70877

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ACV70907

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACV70967

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACV70977

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagggcacc 1260

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gaguucaacu cccccccaa caaccagguc cuccucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACX31905

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACX31911

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACY30128

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACY46165

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACY77665

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccaacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113617
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ05144

<400> 113617
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113618
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACZ05154

<400> 113618
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113619
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05164

<400> 113619
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113620
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05175

<400> 113620
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113621
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05197

<400> 113621
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113622
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05208

<400> 113622
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuccgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacuccgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113623
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ05219

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113624
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ05230

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ05241

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113626
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05296

<400> 113626
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucgccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113627
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05307

<400> 113627
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113628
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05318

<400> 113628
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113629
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05329

<400> 113629
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113630
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05340

<400> 113630
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113631
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05362

<400> 113631
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113632
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05373

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ05395

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05406

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 113635
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ05450

<400> 113635
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccgucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACZ05494

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ACZ05516

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ACZ05593

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__ACZ05604

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACZ16073

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgcccg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cggcugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACZ16093

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ACZ16103

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113659
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16113

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113660
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 113661
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<212> RNA
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neuraminidase__InfluenzaA__ACZ16133

<400> 113661

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ACZ16143

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ16153

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113664
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<212> RNA
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neuraminidase__InfluenzaA__ACZ16163

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113665
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<212> RNA
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neuraminidase__InfluenzaA__ACZ16173

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ACZ16193

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ACZ16203

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113669
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16223

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacga gaccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ACZ16233

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ACZ16243

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaacau cgacaaguga 1410

<210> 113673
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACZ16283

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113676
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16303

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACZ16313

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ACZ16333

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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neuraminidase__InfluenzaA__ACZ16533

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACZ16606

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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neuraminidase__InfluenzaA__ACZ16633

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccuccg cuacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ACZ16653

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113712
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16723

<400> 113712
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113713
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16733

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113714
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16743

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113715
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113716
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACZ16763

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113717
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16773

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113718
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ACZ16783

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113719
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16793

<400> 113719
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113720
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ16803

<400> 113720
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113721
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113722
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16823

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113723
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16833

<400> 113723
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113724
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ16843

<400> 113724
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113725
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16853

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113726
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACZ16863

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113727
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16873

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113728
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ACZ16883

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113729
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16893

<400> 113729
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113730
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16903

<400> 113730
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113731
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16913

<400> 113731
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113732
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16923

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113733
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ16933

<400> 113733
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113734
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ16943

<400> 113734
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113735
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ16953

<400> 113735
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113736
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16963

<400> 113736
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113737
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ16973

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113738
<211> 1410
<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ACZ16983

<400> 113738
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 113739
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ16993

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113741
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<212> RNA
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neuraminidase__InfluenzaA__ACZ17023

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113742
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ17043

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ17063

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ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17073

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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neuraminidase__InfluenzaA__ACZ17083

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACZ17093

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 113748
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17113

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__ACZ17123

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACZ17133

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ACZ17223

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113759
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<400> 113759

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113760

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17263

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113761
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ17273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg cuucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113762
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17283

<400> 113762
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17293

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113764
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ17303

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACZ17313

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ17401

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACZ17411

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<400> 113769

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ17471

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aaccucacca agaucgucua ccucaccaac accaccauca agaaggagau cugccccaag 240

cagcccaagu accgcaacug guccaagccc aagugcaaga ucaccgagcu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

gagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuc cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ95850

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ95870

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113819
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<400> 113819
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ggcaaccaga accagaucga ggccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 113820
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 113821
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ96142

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<400> 113823

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 113825
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<220>
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neuraminidase__InfluenzaA__ACZ96182

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113827
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113828
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ACZ96302

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113835
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113836
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ96362

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113837
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ACZ96375

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113838
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ96385

<400> 113838
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113839
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ACZ96395

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113840
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ACZ96408

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113841
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ96428

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113842
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neuraminidase__InfluenzaA__ACZ96438

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113843
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neuraminidase__InfluenzaA__ACZ96448

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ96479

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113846
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<212> RNA

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccgucg ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ACZ96712

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<400> 113867

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ACZ96782

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 113876
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 113895
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ACZ98171

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ACZ98191

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ggcaaccaga accagaucga gaccugcaac caguccguca ucuccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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neuraminidase__InfluenzaA__ACZ98201

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACZ98261

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacc ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<210> 113915
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<400> 113915
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 113920
<211> 1410
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neuraminidase__InfluenzaA__ACZ98411

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113921
<211> 1410
<212> RNA
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<400> 113921

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113922

<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ACZ98674

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ACZ98694

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ADA60801

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113930
<211> 1410
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<400> 113930
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113931
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 113931

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113932
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113933
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADA69324

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113934
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADA69334

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113935
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADA69451

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 113936
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADA69453

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADA71153

<400> 113937
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cccaucgucg acaucaacau caaggaccac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg accccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 113938
<211> 1413
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<220>
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neuraminidase__InfluenzaA__ADA71155

<400> 113938
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113939
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADA71157

<400> 113939
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113940
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<212> RNA
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neuraminidase__InfluenzaA__ADA71159

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagauc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgagggcaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucaac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaaccg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113941
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADA71161

<400> 113941
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 113942
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADA71165

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuccaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 113943
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADA71167

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<220>
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neuraminidase__InfluenzaA__ADA71169

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADA71171

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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neuraminidase__InfluenzaA__ADA71173

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ADA71175

<400> 113947
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagauc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucaac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADA71177

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ADA83592

<400> 113958
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113959
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADA83596

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113960
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADA83604

<400> 113961
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113962
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 113962
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADA83612

<400> 113963
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113964
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADA83616

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 113965
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADA83624

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113966
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADA83630

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113967
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADA83634

<400> 113967
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADA83638

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 113969
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADA83661

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<400> 113975

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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<210> 113976

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neuraminidase__InfluenzaA__ADA83677

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADA83681

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 113978
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADA83685

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113979
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113980
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB27973

<400> 113980
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113981
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB27983

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113982
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB66693

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 113986
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB81401

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaggucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADB89224

<400> 113996
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113997
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89234

<400> 113997
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113998
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89244

<400> 113998
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 113999
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89264

<400> 113999
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114000
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89274

<400> 114000
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114001
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89284

<400> 114001
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114002
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADB89294

<400> 114002
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114003
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89304

<400> 114003
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114004
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89314

<400> 114004
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114005
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADB89324

<400> 114005
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADB89334

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114007
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<212> RNA
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neuraminidase__InfluenzaA__ADB89344

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114011
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<220>
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neuraminidase__InfluenzaA__ADB89394

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADB89404

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacuccaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADB89414

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADB89504

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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neuraminidase__InfluenzaA__ADB89524

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADB89564

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 114026
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114027
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114028
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neuraminidase__InfluenzaA__ADB89604

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADB89614

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114030

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADB89624

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114031
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<212> RNA
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neuraminidase__InfluenzaA__ADB89634

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADB89644

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADB89664

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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neuraminidase__InfluenzaA__ADB89674

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADB89684

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADC32407

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcgagug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caucguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADC39010

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114067
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ADC45606

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114068
<211> 1413
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<220>
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neuraminidase__InfluenzaA__ADC45628

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ucccucaugc uccagauggg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADC45639

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcgucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADC45650

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<210> 114071
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neuraminidase__InfluenzaA__ADC45661

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADC45683

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114073
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADC45705

<400> 114073
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag aaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114074
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADC45716

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucga gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac caacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114075
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADC45738

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114076
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__ADC45760

<400> 114076
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucggcug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114077
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADC45771

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccaugaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114078
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADC45782

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaaccg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114079
<211> 1413
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<220>
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neuraminidase__InfluenzaA__ADC45804

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADC45815

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccgucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114081
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADC45837

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADC45848

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 114083
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114084

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD14088

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114085
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<212> RNA
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neuraminidase__InfluenzaA__ADD14090

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114086
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14094

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114087
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14096

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD14100

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD14102

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114091
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADD14112

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADD14118

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD14120

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD14122

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD14124

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114101
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14126

<400> 114101
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114102
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14128

<400> 114102
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114103
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD14130

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114104
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD14132

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114105
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14134

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114106
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14136

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14138

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14142

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114109
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14144

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114110
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD14146

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 114111
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114112
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114113
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14152

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114114
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14154

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aucaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114115
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14156

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114116
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<212> RNA

<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD14164

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114118
<211> 1410
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neuraminidase__InfluenzaA__ADD14174

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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neuraminidase__InfluenzaA__ADD14184

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114121
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD14204

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114122
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD21449

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ucccuccucc uccagaucgg caacaucguc ucccucugga ucucccacuc cauccagacc 120

ggcgagaaga accacuccga gaccugcaac cgcaacacca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaucaaca ucgccggcgg ccagggcguc 240

gccuccauca uccucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aaccgcaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagcgc 780

ggcaagauca ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cuccuccggc 960

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cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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gccgaccucc ccuucaccau cgacaaguga 1410

<210> 114123
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD21469

<400> 114123
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ucccucaugc uccagaucgg caacaucauc uccgucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaugc uccgcaccca ggaguccgag ugcaucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114124
<211> 1410
<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD21747

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114125
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD21767

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114126
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD21777

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccgucaucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114127
<211> 1410

<212> RNA
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neuraminidase__InfluenzaA__ADD21787

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD21797

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD21817

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADD21877

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD21897

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD22524

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADD22567

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD22577

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADD22617

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114159
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<212> RNA
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neuraminidase__InfluenzaA__ADD22755

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugcaccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114160
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD22765

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114161
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22775

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114162
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22785

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114163
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22795

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADD22805

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114166
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22825

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22835

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114168
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<212> RNA
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neuraminidase__InfluenzaA__ADD22845

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD22855

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114170
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD22924

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114171
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22934

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114172
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22944

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaugggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114173
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD22954

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD22974

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114175
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23075

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114176
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23085

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagcuc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114177
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23095

<400> 114177
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gccccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114178
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD23105

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114179
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD23115

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114180
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23125

<400> 114180
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114181
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23135

<400> 114181
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114182
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD23145

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114183
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23155

<400> 114183
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114184
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23165

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114185
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23175

<400> 114185
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114186
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD23185

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114187
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD23195

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114188
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23223

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114189
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23233

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD23243

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114191
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD23253

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114192

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc gagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114193
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neuraminidase__InfluenzaA__ADD23283

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114194
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD23293

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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neuraminidase__InfluenzaA__ADD23303

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD23313

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114197
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23323

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

guccucaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114198
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23333

<400> 114198
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114199
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23358

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114200
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD23368

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114201
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23378

<400> 114201

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114202
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23388

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114203
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD23398

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114204
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23408

<400> 114204
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114205
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23438

<400> 114205
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114206
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23448

<400> 114206
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114207
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADD23458

<400> 114207
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114208
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23468

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114209
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23478

<400> 114209
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114210
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23488

<400> 114210
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114211
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23498

<400> 114211
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accacaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114212
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114213
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23518

<400> 114213
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114214
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD23997

<400> 114214
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD24007

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114216
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD24017

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114217
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD24024

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114218
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114219
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD24026

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114220
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD24027

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114221
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD24028

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD24029

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD24030

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114224
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ADD24031

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114225
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD24032

<400> 114225
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114226
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25231

<400> 114226
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaugggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114227
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25233

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114228
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD25235

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114229
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25244

<400> 114229
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114230
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25246

<400> 114230
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114231
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD25248

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114232
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25250

<400> 114232
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccgcuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114233
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25255

<400> 114233
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114244
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<212> RNA
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neuraminidase__InfluenzaA__ADD25284

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD25287

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114246

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD25291

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD25293

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114248
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD25300

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD25304

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADD25306

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acgagcccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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neuraminidase__InfluenzaA__ADD25308

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADD25310

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD25312

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD25314

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114255
<211> 1410
<212> RNA
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<220>
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<400> 114255

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD29799

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114257
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<212> RNA
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neuraminidase__InfluenzaA__ADD29800

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114258
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD29801

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD29802

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD29803

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADD29805

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ADD29806

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74461

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ADD74471

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74481

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74491

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74521

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ADD74551

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacuac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114286
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADD74571

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD74581

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD74591

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADD74601

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADD74621

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADD74681

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114301
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neuraminidase__InfluenzaA__ADD74721

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74811

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74851

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADD74871

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADD74901

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74971

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD74991

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD75001

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaagacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD75051

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucauc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cggcugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD96889

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD96959

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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<211> 1410
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neuraminidase__InfluenzaA__ADD96989

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD97038

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccggcg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADD97048

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114370
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD97069

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114371
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97126

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114372
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD97164

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97174

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114374
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97194

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacgccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114376
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97204

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD97214

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD97254

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114382
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<212> RNA
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neuraminidase__InfluenzaA__ADD97264

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADD97274

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucugc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD97294

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD97394

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccagcccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADD97454

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

uccgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADD97464

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADD97494

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD97514

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114405
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neuraminidase__InfluenzaA__ADD97554

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114406
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97564

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114408

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97584

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADD97681

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97691

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADD97701

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucaacuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114415
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD97921

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114416
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADD97931

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114417
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD97941

<400> 114417

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97951

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114419
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADD97961

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacgccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114420
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD97971

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114421
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<212> RNA
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neuraminidase__InfluenzaA__ADD97981

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccgucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114426
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccgucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADD98051

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114428
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADD98071

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD98101

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADD98121

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD98161

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccagaccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD98201

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADD98211

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20324

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114444
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADE20334

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114445
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADE20344

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20354

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114447
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADE20378

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114448
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<220>
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neuraminidase__InfluenzaA__ADE20391

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADE20631

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20641

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADE20651

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADE20661

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADE20721

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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neuraminidase__InfluenzaA__ADE20751

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20821

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114467
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADE20841

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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neuraminidase__InfluenzaA__ADE20871

<400> 114471

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114472
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADE20881

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114473
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADE20891

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114474
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADE20901

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20911

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114476
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ADE20921

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucggcuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE20941

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADE20951

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114480
<211> 1410
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neuraminidase__InfluenzaA__ADE20961

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacgac aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADE21001

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADE21011

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE21021

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccgucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADE28813

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADE28853

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccgucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADE28914

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADE28924

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ADE28934

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADE28954

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADE28964

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaucaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADE28974

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADE34194

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau guccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuccgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADE45510

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114531
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uuccaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cacccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114567
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<212> RNA
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<220>
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<400> 114567
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114568
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114569
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADF27366

<400> 114569

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114570

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 114570
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADF27392

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114572
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADF27402

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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neuraminidase__InfluenzaA__ADF27422

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADF27432

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADF27442

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF27462

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ggcaaccaga accagaucga ggccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccgucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADF27472

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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ggcaaccaga accaggucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114579
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADF27492

<400> 114579

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ggcaaccaga accagaucga gcccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114580
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114581
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADF27512

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 114582
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADF27532

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADF27552

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccaacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADF27592

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagcgc 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF27612

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF27632

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADF27642

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADF27652

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gcaacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114605
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<212> RNA
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neuraminidase__InfluenzaA__ADF27818

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114606
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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neuraminidase__InfluenzaA__ADF27908

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__ADF27918

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114616
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114617
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 114619
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucuccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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<210> 114623
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccaccgg ccagcucguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF83816

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114664
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADF87155

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF87175

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114672
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<212> RNA
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neuraminidase__InfluenzaA__ADF87185

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADF87195

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADF87235

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADF97253

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADF97257

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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neuraminidase__InfluenzaA__ADF97837

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccuccguca cccucgccgg caaccucucc cucugccccg ucuccggcug ggccgucuac 240

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gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagu gccaggacga guccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 114702
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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga guccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

gagaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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ggcaaccagu gccaggacaa gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacuccauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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gccgagcucc ccuucaccau cgacaaguga 1350

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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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<400> 114708
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ucccucaugc uccagaucgg caacaugauc uccaucugga ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG21440

<400> 114709
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga guccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114710
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG21442

<400> 114710
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114711
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG21444

<400> 114711
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga guccaucucc aacaccaagu uccucaccga gaaggccguc 180

accuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgccccugga ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuucccc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114712
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG21446

<400> 114712
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuucccc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114713
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG21448

<400> 114713
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

ggcaaggucg ucaaguccgu cgagcucgac gcccccaacu accacuacga ggagugcucc 780

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cgccccugga ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cgucuucccc 960

aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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uccuccaucu ccuucugcgg cgucaacggc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114714
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG21450

<400> 114714
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagu gccaggacga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacauca ugcgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cuccggccag gccuccuaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccuccuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 114715
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG27797

<400> 114715
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114716
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADG27983

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccaugg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114717
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADG27989

<400> 114717
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114718
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG27998

<400> 114718
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccaugg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114719
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neuraminidase__InfluenzaA__ADG28013

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114720
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42086

<400> 114720
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114721
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42096

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114722
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADG42106

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114723
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42116

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114724
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42126

<400> 114724
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114725
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42136

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114726
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114727
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42156

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114728
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG42166

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114729
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42186

<400> 114729
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114730
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG42196

<400> 114730
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114731
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42206

<400> 114731
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114732
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42216

<400> 114732
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114733
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42226

<400> 114733
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114734
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42236

<400> 114734
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114735
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADG42246

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114736
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42256

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114737
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42276

<400> 114737
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcgccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114739
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114740
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114741
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114743
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42346

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 114744
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<212> RNA
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neuraminidase__InfluenzaA__ADG42356

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADG42366

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADG42386

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gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114748
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42396

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114749
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

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<400> 114749

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114750

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42426

<400> 114750
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114751
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG42436

<400> 114751
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114752
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42446

<400> 114752
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114753
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<220>
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neuraminidase__InfluenzaA__ADG42456

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114754
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114757
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<220>
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neuraminidase__InfluenzaA__ADG42496

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114758
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaaggucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114759
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42516

<400> 114759

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaaggucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114760
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42526

<400> 114760
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcc ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114761
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42536

<400> 114761
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaccucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114762
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42546

<400> 114762
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114763
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42556

<400> 114763
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114764
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42566

<400> 114764
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccacuccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114765
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADG42576

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccuacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114766
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42586

<400> 114766
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADG42606

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114769
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG42626

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114770
<211> 1410
<212> RNA
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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114771
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 114772
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42656

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 114786
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114787
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114788
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG42836

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 114790
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<220>
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neuraminidase__InfluenzaA__ADG42856

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG42866

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADG42876

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<400> 114813

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114814
<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114815
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG58929

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114816
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG58931

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114817
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG58932

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aaccucaucc uccagaucgg caacaccauc uccaucugga ucaaccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114818
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG58933

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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aaccucaucc uccagaucgg caacaccauc uccaucugga ucaaccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114820
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<212> RNA
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neuraminidase__InfluenzaA__ADG58935

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aaccucaucc uccagaucgg caacaccauc uccaucugga ucaaccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 114821
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG58936

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 114822
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADG58937

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114823
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<220>
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neuraminidase__InfluenzaA__ADG58938

<400> 114823
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aaccucaucc uccagaucgg caacaccauc uccaucugga ucaaccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 114824
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccaugg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114825
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114826
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADG59591

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114828
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<212> RNA
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neuraminidase__InfluenzaA__ADG59593

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114829
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG59594

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114830
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114831
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<212> RNA
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neuraminidase__InfluenzaA__ADG59596

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114832
<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114836
<211> 1410
<212> RNA

<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114837
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 114843
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacc ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114844
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADG59612

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 114847
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADG59613

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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neuraminidase__InfluenzaA__ADG59614

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADH01811

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADH01831

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADH01841

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADH01871

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114856
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neuraminidase__InfluenzaA__ADH01881

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114857
<211> 1410
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<220>

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADH01901

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114862
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADH01941

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114863
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114864
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADH01961

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114865
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADH01981

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114866
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADH01991

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114867
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADH02011

<400> 114867

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114868
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADH02021

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<211> 1410
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<220>
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neuraminidase__InfluenzaA__ADI24510

<400> 114869
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114870
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114876
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neuraminidase__InfluenzaA__ADI24530

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADI24558

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114883
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114884
<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADI24566

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADI24568

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADI24576

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114891
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<212> RNA
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neuraminidase__InfluenzaA__ADI24580

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADI24592

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114895
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<220>
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neuraminidase__InfluenzaA__ADI24598

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADI24604

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADI46780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacgagcag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADI48201

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114911
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114913
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48211

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114916
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<220>
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neuraminidase__InfluenzaA__ADI48217

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 114918
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48219

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114919
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48221

<400> 114919
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114920
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI48625

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114921
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 114921

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114922
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48655

<400> 114922
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114923
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48665

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114924
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48675

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cucaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<400> 114925
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcgc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48695

<400> 114926
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI48705

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADI48715

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114929
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<212> RNA
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neuraminidase__InfluenzaA__ADI48725

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114930
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114931
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<212> RNA
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<220>
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<400> 114931
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucuccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADI48785

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114936
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<220>
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neuraminidase__InfluenzaA__ADI48795

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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neuraminidase__InfluenzaA__ADI49032

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114938
<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114939
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI49263

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114940
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI49273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114941
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<212> RNA
<213> Artificial Sequence

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<400> 114941
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 114942
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADI49315

<400> 114942
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114943
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI49325

<400> 114943
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA

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neuraminidase__InfluenzaA__ADI49335

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114945
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI49345

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacc ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 114946
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADI49355

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114947
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neuraminidase__InfluenzaA__ADI49365

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114948
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI49375

<400> 114948
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114949
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114950
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neuraminidase__InfluenzaA__ADI49395

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADI49730

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADI49740

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADI49750

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<212> RNA
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neuraminidase__InfluenzaA__ADI49760

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 114957
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gacgagcucc ccuucaccau cgacaaguga 1410

<210> 114961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI52831

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__ADI52832

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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<212> RNA
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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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<220>

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<400> 114965

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 114966

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI75854

<400> 114966
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 114967
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI75876

<400> 114967
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 114968
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADI75887

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 114969
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI75909

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADI75920

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 114971
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADI77352

<400> 114971
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI77363

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114973
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 114974
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gacuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114975
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<212> RNA
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<220>
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<400> 114975

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 114976
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADI99633

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADI99653

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114985
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADI99673

<400> 114985
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114986
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114987
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADI99703

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 114988
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ADI99713

<400> 114988
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADI99723

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADI99733

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ00487

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ00489

<400> 114993
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ00490

<400> 114994
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__ADJ00491

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ADJ18160

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA

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<220>
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neuraminidase__InfluenzaA__ADJ18162

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcaagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ18164

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADJ18170

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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neuraminidase__InfluenzaA__ADJ18172

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

cgcaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115004
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<220>
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neuraminidase__InfluenzaA__ADJ18174

<400> 115004
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115005
<211> 1410
<212> RNA
<213> Artificial Sequence

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccucuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115006
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADJ37250

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaccgucu ccuccuacgu cugcuccggc 960

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115007
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<212> RNA
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neuraminidase__InfluenzaA__ADJ37252

<400> 115007
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caucguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115008
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADJ37263

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115009
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADJ37273

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADJ40447

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADJ40457

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ40467

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADJ40477

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccggc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADJ40557

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADJ40577

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADJ80687

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADJ80727

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggucaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115043
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<212> RNA
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neuraminidase__InfluenzaA__ADJ80737

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADJ80747

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagcgc 780

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aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115045
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADJ80757

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADJ80777

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADJ80787

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADJ80797

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ80807

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacgccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADJ80950

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADJ80960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADJ81016

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucaacuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115071
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg cuccuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115072
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADJ81066

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115073
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADJ84775

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115074

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADJ88785

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccgucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 115075
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neuraminidase__InfluenzaA__ADK21716

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115076
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21726

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115077
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neuraminidase__InfluenzaA__ADK21736

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115078
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK21746

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gcacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115079
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<220>
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neuraminidase__InfluenzaA__ADK21756

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 115081
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neuraminidase__InfluenzaA__ADK21776

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115082
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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<211> 1410
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<220>
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<400> 115083

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115084
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neuraminidase__InfluenzaA__ADK21806

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115085
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK21816

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115086
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neuraminidase__InfluenzaA__ADK21826

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115087
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<212> RNA
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neuraminidase__InfluenzaA__ADK21836

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115088
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neuraminidase__InfluenzaA__ADK21846

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK21856

<400> 115089
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115090
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21866

<400> 115090
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115091
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK21876

<400> 115091
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115092
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21886

<400> 115092
augaacccca accagaagau caucaccauc ggcuccgucu gcaugaccau cggcauggcc 60

aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115093
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21896

<400> 115093
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaccaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucuccucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115094
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK21906

<400> 115094
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccugga ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucggcuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115095
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK21916

<400> 115095
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115096
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21926

<400> 115096
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115097
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21936

<400> 115097
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115098
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK21946

<400> 115098
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK21956

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc aacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115100
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115101
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK32403

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115102
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK32413

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115103
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK32423

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115104
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK32433

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115105
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK32443

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115106
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK32453

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucuccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 115107
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neuraminidase__InfluenzaA__ADK32463

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccucauc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115108
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADK32473

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADK32650

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__ADK32680

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacaa gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<210> 115117
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK32700

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115120
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK33614

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115121
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK33624

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115122
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK33634

<400> 115122
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115123
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK33644

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg cuccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<220>
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neuraminidase__InfluenzaA__ADK33654

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADK33664

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADK33674

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115127
<211> 1410
<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK33684

<400> 115127

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADK33764

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADK33784

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaaca agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADK33824

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacau caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccccc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADK33874

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADK33904

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADK33944

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu ccccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK45446

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK45457

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADK45479

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADK62686

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__ADK62696

<400> 115165
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115166
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK64994

<400> 115166
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115167
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK65002

<400> 115167
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caccggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccggccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115168
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK65010

<400> 115168
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115169
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK65018

<400> 115169
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccau cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115170
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADK87290

<400> 115170
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc uacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115171
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK87292

<400> 115171
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgc cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115172
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK87294

<400> 115172
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ugcuucuucc uccagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca ccggcaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacaacaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115173
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK87297

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag aaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115174
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK87299

<400> 115174
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuuca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK87301

<400> 115175
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucgcc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115176
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK87303

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115177
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK87305

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115178
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<220>
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neuraminidase__InfluenzaA__ADK87307

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau cggcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115179
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<220>
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neuraminidase__InfluenzaA__ADK87312

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADK87314

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagggc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115181
<211> 1410
<212> RNA
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<220>

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<400> 115181

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagaucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115182

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK87318

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115183
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK87320

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggguccacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK87324

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115185
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK87327

<400> 115185
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagcgcucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 115186
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADK87331

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADK87332

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa gcacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADK87339

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115194
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115195
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90213

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115196
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90217

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115197
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90221

<400> 115197
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115198
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90225

<400> 115198
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115199
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90229

<400> 115199
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115200
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90233

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115201
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90241

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacgccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115202
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK90245

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115203
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90249

<400> 115203
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaugaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115204
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90253

<400> 115204
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaugaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115205
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90257

<400> 115205
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115206
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90261

<400> 115206
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115207
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90265

<400> 115207
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ugggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115208
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaagugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccaucaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115209
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90273

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115210
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90277

<400> 115210
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115211
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90281

<400> 115211
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115212
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90289

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accucaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115213
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90293

<400> 115213
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115214
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90297

<400> 115214
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115215
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90301

<400> 115215
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115216
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90305

<400> 115216
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115217
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90309

<400> 115217
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115218
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90313

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115219
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90317

<400> 115219
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115220
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90321

<400> 115220
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115221
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90325

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115222
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neuraminidase__InfluenzaA__ADK90329

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac cgcuccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

gaggccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115223
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90333

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115224
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADK90337

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115225
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90341

<400> 115225
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115226
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK90345

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90349

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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neuraminidase__InfluenzaA__ADK90353

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK90357

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115230
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90361

<400> 115230
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK90365

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<220>
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neuraminidase__InfluenzaA__ADK90369

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90373

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115234
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90377

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115235
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK90381

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115236

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90385

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucuccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcaccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK90389

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90393

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADK90397

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADK90401

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcaccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADK90409

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ADK90413

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccaugg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115246
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK90425

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADK94194

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADK94205

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ADK94238

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK94260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK94271

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115255
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK94293

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115256
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK94304

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115257
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK94326

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115258
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK94337

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115259
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<220>
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neuraminidase__InfluenzaA__ADK94444

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98504

<400> 115269
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcgaccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115270
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98506

<400> 115270
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaugggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115271
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK98626

<400> 115271
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau gaucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuaccu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115272
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98637

<400> 115272
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccacaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115273
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98648

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggccg cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115274
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98659

<400> 115274
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115275
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADK98670

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115276
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98681

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115277
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK98703

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115278
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADK98725

<400> 115278
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaaccucau gcccaucuga 1410

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaaga uccucuucau cgaggagggc 780

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<212> RNA
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neuraminidase__InfluenzaA__ADK98769

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADK98780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ADK98813

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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neuraminidase__InfluenzaA__ADK98824

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ADK98835

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115289
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<220>

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<400> 115289

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuaccu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115290

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ADK98868

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADK98879

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADK98890

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ADK98901

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ADK98912

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccgucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caaguccgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADK98989

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADK99000

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADK99022

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ADK99033

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADK99044

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADK99055

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115308
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK99066

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaagaagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115309
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99077

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115310
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADK99088

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccgucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115311
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<220>
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115312
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<220>
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neuraminidase__InfluenzaA__ADK99110

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADK99121

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__ADK99132

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ADK99143

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADK99154

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115317
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK99176

<400> 115317
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccucaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115318
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99187

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115319
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99198

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115320
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK99220

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADK99231

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caacugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuaccu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115322
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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99242

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99253

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggccaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADK99264

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADK99275

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacc cccccccaa caaccagguc acccccgcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ADL28025

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neuraminidase__InfluenzaA__ADL28036

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgccaaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADL28080

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL28091

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADL28102

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ADL28113

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ADL28129

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115344

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL28151

<400> 115344
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115345
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28162

<400> 115345
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccacaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115346
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28173

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28184

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115348
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28195

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcguca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115349
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL28206

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aaggucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28217

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28228

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL28239

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADL28250

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADL28373

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115356
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL28387

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL28391

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__ADL28395

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADL29685

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115361
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL29695

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL29705

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADL32117

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADL32357

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADL32367

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADL32377

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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<210> 115381
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADL32447

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca aguccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADL32683

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115401
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115402
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADL32743

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115403
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39139

<400> 115403
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucuccg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115404
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39150

<400> 115404
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115405
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39172

<400> 115405
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115406
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADL39183

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115407
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39194

<400> 115407

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115408
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADL39205

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115409
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39227

<400> 115409
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115410
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39238

<400> 115410
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ADL39249

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115412
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL39260

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115413
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39282

<400> 115413
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugcccccgc 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caagguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADL39293

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115415
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39304

<400> 115415
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ucccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39326

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39392

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115418
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADL39403

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115419
<211> 1413
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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115420
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL39447

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucaccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115421
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADL39458

<400> 115421
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115422
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADL39469

<400> 115422
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115423
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL39480

<400> 115423
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115424
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL39491

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caucguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

uccuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115425
<211> 1410
<212> RNA
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<220>
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<400> 115425
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115426
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL41175

<400> 115426
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aaccucaucc uccagaucgg caacaucauc uccaccugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115427
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADL60255

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacu acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115428
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADL60277

<400> 115428
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADL60288

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccaggaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADL60332

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADL60343

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ADL60354

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ADL60376

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccggcaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADM07146

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ADM07156

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM07474

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM07485

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM07496

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADM07507

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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neuraminidase__InfluenzaA__ADM12820

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ADM12831

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM12853

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADM12864

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM12884

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__ADM12894

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag uccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADM12904

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM12914

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM12934

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115458
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM12944

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM12954

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115460
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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<400> 115461

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADM12984

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccauccg cuccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM13004

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM13014

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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neuraminidase__InfluenzaA__ADM13034

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADM13054

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccaacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13064

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13074

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacc ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaaguu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115471
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13084

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115472
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM13094

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aaccucaucc uccagaucgg caacaccauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115473
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115474
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13124

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADM13134

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaccc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADM13154

<400> 115476
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ggcaaccaga agcagaucga gaccugcaac caguccgucu ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115477
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13164

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccaggaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115478
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115479
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13184

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115480
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<212> RNA
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neuraminidase__InfluenzaA__ADM13194

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM13204

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13214

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADM13224

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccauccg cuccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADM13234

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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neuraminidase__InfluenzaA__ADM13244

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM13314

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADM13344

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115496
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcaa cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13467

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccucc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13468

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__ADM13470

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115505
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<212> RNA
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<220>

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<400> 115505

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 115506

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM13473

<400> 115506
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 115507
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM13474

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcacaucuga 1410

<210> 115508
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM14469

<400> 115508
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccaugcg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaccggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADM14479

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM14499

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADM14527

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM14537

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM14546

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115515
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uuccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115516
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM14573

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADM14582

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADM14591

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADM14611

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucuccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM14629

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM14639

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADM14657

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM14702

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM14711

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADM14720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM14730

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccgucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg uccucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM14748

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 420

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1080

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neuraminidase__InfluenzaA__ADM14758

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADM14767

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaucaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115535
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM14777

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM14814

<400> 115536
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM14823

<400> 115537

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM14841

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM14859

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADM14868

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucaacuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115541
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM14878

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM14887

<400> 115542
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg uccucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADM14987

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ADM26798

<400> 115552
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 115553
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM26809

<400> 115553
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccaccguc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccacaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115554
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM26820

<400> 115554
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 115555
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31427

<400> 115555
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccacau ggagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggggc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaucgagaag 720

ggcaaggucg ucaaguccgu cgagcucaac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acuccggcga gaucaucugc gucugccgcg acaacuggca cggcuccaac 840

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 900

gucuucggcg acaacccccg ccccaacgac ggcaccggcu ccugcggccc cauguccccc 960

aacggcgccu acggcaucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

accggcaccg acuccgaguu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1140

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1200

ugcuucuggg ucgagcucau ccgcggccgc cccaaggagu ccaccaucug gaccuccggc 1260

uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 115556
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31481

<400> 115556
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaag 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115557
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31491

<400> 115557
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115558
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31501

<400> 115558
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccaucaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115559
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31511

<400> 115559

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115560
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31521

<400> 115560
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115561
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31531

<400> 115561
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115562
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31541

<400> 115562
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115563
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31551

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115564
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31561

<400> 115564
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115565
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31571

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115566
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM31581

<400> 115566
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaaguu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115567
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31601

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115568
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31611

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115569
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31621

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcuccucccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115570
<211> 1410
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115571
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31641

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADM31691

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31701

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115579
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31721

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115581
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31741

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc aacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115582
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM31751

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115583
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM31761

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115584
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31771

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaucuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115585
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31801

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31811

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADM31821

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM31831

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADM31851

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagcgc 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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neuraminidase__InfluenzaA__ADM31911

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADM31931

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADM31951

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115601
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM31961

<400> 115601
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115602
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM31971

<400> 115602
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115603
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM31981

<400> 115603

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115604

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM31991

<400> 115604
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115605
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32001

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115606
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32011

<400> 115606
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115607
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32021

<400> 115607
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115608
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32031

<400> 115608
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115609
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<220>
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neuraminidase__InfluenzaA__ADM32051

<400> 115609
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccgucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADM32061

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADM32071

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ADM32091

<400> 115613

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM32101

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADM32554

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__ADM32564

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115619
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 115619
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115620
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM32594

<400> 115620
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115621
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM32604

<400> 115621
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115622
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM32614

<400> 115622
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115623
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM32624

<400> 115623
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115624
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM32634

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115625
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32644

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115626
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32664

<400> 115626
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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neuraminidase__InfluenzaA__ADM32674

<400> 115627
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115628
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM32684

<400> 115628
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115629
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM32694

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115630
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115631
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<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADM32714

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccgucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADM32864

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgucgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<400> 115657

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ADM33006

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115660
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33025

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

uccaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115661
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM33042

<400> 115661
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33062

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADM33071

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115664
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neuraminidase__InfluenzaA__ADM33081

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 115665
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neuraminidase__InfluenzaA__ADM33091

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<400> 115667

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115669
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<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADM33130

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115670
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<212> RNA
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neuraminidase__InfluenzaA__ADM33139

<400> 115670
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33149

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115672
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33159

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115673
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115674
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<220>
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neuraminidase__InfluenzaA__ADM33179

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115675
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM33188

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADM33197

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115679
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33224

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115680
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33234

<400> 115680
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115681
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33243

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADM33253

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ADM33262

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM33282

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADM33427

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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neuraminidase__InfluenzaA__ADM33437

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115700
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM33443

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115701
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115702
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<212> RNA
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neuraminidase__InfluenzaA__ADM52456

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 115703
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<212> RNA
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neuraminidase__InfluenzaA__ADM52466

<400> 115703
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 115704
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neuraminidase__InfluenzaA__ADM52486

<400> 115704
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 115708
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52527

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115709
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52537

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115710
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52547

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115711
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115712

<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADM52567

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADM52587

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115718
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52627

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115719
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52637

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ADM52647

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115721
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<212> RNA
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<400> 115721

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115722
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM52667

<400> 115722
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115723
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<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADM52687

<400> 115723
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115724
<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115725
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115726
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccgcc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM86412

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM86422

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgucgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115730
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<212> RNA
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<210> 115731
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM86443

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 115732
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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95377

<400> 115733
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ggcaaccagc accaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccaugg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccucccaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 115734

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95650

<400> 115734
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115735
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM95651

<400> 115735
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115736
<211> 1410
<212> RNA
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<220>
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<400> 115736
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115737
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95654

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115738
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95655

<400> 115738
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115739
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115740
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neuraminidase__InfluenzaA__ADM95658

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 115741
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115742
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM95660

<400> 115742
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADM95661

<400> 115743

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115744
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADM95670

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115753
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<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADM95672

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115754
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADM95674

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADM95675

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115757
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADM95678

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115759
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95679

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccaucaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115761
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<212> RNA
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neuraminidase__InfluenzaA__ADM95681

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<213> Artificial Sequence

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga ggaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggccgccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccga ggaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggccgccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggccgccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADM95707

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ggccgccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<211> 1410
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__ADM95712

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM95713

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115791
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<220>
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neuraminidase__InfluenzaA__ADM95714

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115792
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM95715

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115793
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADM95716

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115794
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM95717

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115795
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95718

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115796
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<220>
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neuraminidase__InfluenzaA__ADM95719

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ADM95720

<400> 115797

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115798
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADM95723

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115800
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95724

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115801
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM95725

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADM95726

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ugcuucuuca ugcagaucgc cauccucauc accgccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95727

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115804
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95728

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccgag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM95729

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM95730

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADM95732

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM95733

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ADM95735

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115811
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM95736

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95737

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115813
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95738

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 115814
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95739

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADM95740

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccaagguccu cuggaccucc 1320

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<210> 115816
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95741

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADM95742

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115818
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADM95743

<400> 115818
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADM95744

<400> 115819
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 115820
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN05229

<400> 115820
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115821
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN06292

<400> 115821
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115822
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN06303

<400> 115822
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115823
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN06314

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgagg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115824
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN06325

<400> 115824
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115825
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN06347

<400> 115825
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gaguccccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115826
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN06369

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADN26031

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115828
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<212> RNA
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neuraminidase__InfluenzaA__ADN26032

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 115829
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26033

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115830
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26034

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115831
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<212> RNA
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neuraminidase__InfluenzaA__ADN26035

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115832
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<212> RNA
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neuraminidase__InfluenzaA__ADN26036

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26037

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADN26038

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26041

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115836
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26042

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gccccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115837
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26043

<400> 115837
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccagg ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115838
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26044

<400> 115838
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115839
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26045

<400> 115839
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115840
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26047

<400> 115840
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115841
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN26048

<400> 115841

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115842

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26049

<400> 115842
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115843
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26050

<400> 115843
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115844
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26051

<400> 115844
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115845
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADN26053

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115848
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26057

<400> 115848
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115849
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26058

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115850
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115851
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115852
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADN26063

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADN26064

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADN26065

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADN26075

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115865
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neuraminidase__InfluenzaA__ADN26078

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115866
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN26079

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115867
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26080

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115868
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN26081

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115869
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26082

<400> 115869
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115870
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26083

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115871
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26084

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__ADN26085

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 115873
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26086

<400> 115873
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115874
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26087

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115903
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26117

<400> 115903
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115904
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN26118

<400> 115904
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115905
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26119

<400> 115905

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115906
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN26120

<400> 115906
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115907
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26121

<400> 115907
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115908
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26122

<400> 115908
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26123

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115910
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26124

<400> 115910
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115911
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN26125

<400> 115911
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115912
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26126

<400> 115912
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADN26127

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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 115914
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN26128

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115915
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26129

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 115918
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26132

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accgcaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115932
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26148

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26149

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115934
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115935
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115936
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26152

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115937
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26153

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 115938
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN26154

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115939
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26155

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 115940
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26157

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADN26159

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115942
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26161

<400> 115942
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115943
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN26162

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADN26163

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaucau cgacaaguga 1410

<210> 115945
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26164

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcc ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115946
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26168

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26178

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 115948
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26868

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
<212> RNA
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<400> 115949

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115950

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN26870

<400> 115950
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADN26871

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ggcaaccaga accagaucga gaccuacaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADN26872

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccucuccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__ADN26875

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucaacuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115960
<211> 1410
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<220>
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neuraminidase__InfluenzaA__ADN26880

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26881

<400> 115961
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115962
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26882

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115963
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN26883

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 115964
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89064

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115965
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89075

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89086

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaagacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADN89097

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115968
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89108

<400> 115968
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115969
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89119

<400> 115969
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

aacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cacccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115970
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN89130

<400> 115970
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaacu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115971
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN89141

<400> 115971
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucuccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115972
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89152

<400> 115972
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccauc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115973
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89163

<400> 115973
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115974
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89174

<400> 115974
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115975
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89185

<400> 115975
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucuccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115976
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89196

<400> 115976
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115977
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89207

<400> 115977
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115978
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89218

<400> 115978
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagccc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115979
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89229

<400> 115979
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115980
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN89240

<400> 115980
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115981
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89251

<400> 115981
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115982
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89262

<400> 115982
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115983
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89273

<400> 115983
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115984
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89284

<400> 115984
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115985
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89295

<400> 115985
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115986
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89306

<400> 115986
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115987
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89317

<400> 115987
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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89328

<400> 115988
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cugggccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115989
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN89339

<400> 115989
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115990
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89350

<400> 115990
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaccac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115991
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89361

<400> 115991
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115992
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__ADN89372

<400> 115992
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaaca ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

aacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115993
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89383

<400> 115993
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucuccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89405

<400> 115994
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ccuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115995
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89416

<400> 115995
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

guccucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115996
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89427

<400> 115996
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115997
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89438

<400> 115997
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADN89449

<400> 115998
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

cccuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 115999
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN89460

<400> 115999
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116000
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89482

<400> 116000
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116001
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89493

<400> 116001
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gaguccccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116002
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89504

<400> 116002
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116003
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN89515

<400> 116003

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116004

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89526

<400> 116004
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116005
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89537

<400> 116005
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116006
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89548

<400> 116006
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADN89570

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116008
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaagacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116009
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89592

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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<400> 116010
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADN89614

<400> 116011
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADN89625

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADN89636

<400> 116013

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__ADN89658

<400> 116015
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADN89669

<400> 116016
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116017
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89680

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116018
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89691

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116019
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89702

<400> 116019
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

guccucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116020
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN89713

<400> 116020
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116021
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89724

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116022
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89735

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116023
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89746

<400> 116023
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116024
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN89757

<400> 116024
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116025
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89768

<400> 116025
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADN89779

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccauc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<210> 116027
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neuraminidase__InfluenzaA__ADN89790

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116028
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADN89801

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacaa gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116029
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89823

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccacacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116030
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89834

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116031
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89845

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116032
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89856

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116033
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89867

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADN89878

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aaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADN89889

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADN89900

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116038
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<212> RNA
<213> Artificial Sequence

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116039
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89933

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN89955

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116041
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN89966

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADN89977

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 116043
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<212> RNA
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<220>
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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__ADN89999

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116045
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neuraminidase__InfluenzaA__ADN90010

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90021

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116047
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90032

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90043

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90054

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADN90065

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__ADN90076

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90087

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADN90098

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADN90109

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116055
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90120

<400> 116055
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116056
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90131

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116057
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADN90142

<400> 116057

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116058

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90153

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116059
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90164

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116060
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90186

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116061
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN90197

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116062
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADN90208

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADN90219

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116064
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN92469

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__ADN92480

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN92491

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__ADN92502

<400> 116067

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<210> 116068
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN92512

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116069
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN92522

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116070
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN92532

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 116071
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__ADN92542

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116072
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADN92552

<400> 116072
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116073
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO00733

<400> 116073
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116074
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO00743

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccauccgc caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116075
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO00753

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116076
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12146

<400> 116076
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116077
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12156

<400> 116077
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116078
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12166

<400> 116078
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116079
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 116079

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116080
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12186

<400> 116080
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116081
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO12196

<400> 116081
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116082
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12206

<400> 116082
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116083
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12216

<400> 116083
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116084
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADO12226

<400> 116084
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116085
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12246

<400> 116085
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116086
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12266

<400> 116086
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116087
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12276

<400> 116087
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aaguccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116088
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12286

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116089
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12296

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116090
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12306

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116091
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12316

<400> 116091
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADO12326

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116093
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO12346

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 116095
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neuraminidase__InfluenzaA__ADO12356

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ADO12366

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADO12376

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADO12386

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADO12396

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADO12406

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 116101
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<212> RNA
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neuraminidase__InfluenzaA__ADO12416

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116102
<211> 1410
<212> RNA
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<220>
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<400> 116102
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116103
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 116103
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116104
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO12446

<400> 116104
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116105
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12456

<400> 116105
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116106
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12466

<400> 116106
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116107
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO12476

<400> 116107
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116108
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12486

<400> 116108
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12496

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12506

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116111
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADO12516

<400> 116111

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116112

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12526

<400> 116112
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116113
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12536

<400> 116113
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116114
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12546

<400> 116114
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116115
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO12556

<400> 116115
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116116
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO12566

<400> 116116
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116117
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12576

<400> 116117
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116118
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12586

<400> 116118
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116119
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADO12596

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116120
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADO12606

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116121
<211> 1410
<212> RNA
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<220>
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<400> 116121

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116122
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO12626

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116123
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO14355

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO21028

<400> 116124
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ugcuuccuca ugcagaucgc cauccucgcc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaccau caucgagcgc 180

aacaucgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ccgcccccuu cuccaagggc 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcguc ccccaccgca cccuccucau guccgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacgucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcaccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucguc 780

cacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuacucc uccuccaacu gccgcgaccc caacaacgag 1020

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aucaacuuca ugcccaucug a 1401

<210> 116125
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADO21039

<400> 116125
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ugcuuccuca ugcagaucgc cauccucgcc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaccau caucgagcgc 180

aacaucgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ccgcccccuu cuccaagggc 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcgac ccccaccgca cccuccucau guccgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcaccgucgu caugaccgac 720

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uacaucaaca uggccgacua caccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuacucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 116126
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADO21050

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ugcuuccuca ugcagaucgc cauccucgcc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaccau caucgagcgc 180

aacaucgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ccgcccccuu cuccaagggc 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcggc ccccaccgca cccuccucau guccgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcaccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucguc 780

cacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

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<210> 116127
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO25095

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO25105

<400> 116128
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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaccaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgaccgccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADO25115

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__ADO25135

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADO25155

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ADO25165

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADO25175

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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neuraminidase__InfluenzaA__ADO25185

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccauguccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADO25195

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucuccuucau gcccaucuga 1410

<210> 116161
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADT78899

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucau gcgcgagccc 360

uacgucuccu gcaaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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<210> 116162
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADT78963

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADT79001

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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<210> 116166

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neuraminidase__InfluenzaA__ADT79131

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gccaccgccu ccuucaucua cgacggccgc cucgaggacu ccaucggcuc cugguccccag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acaucgagga gugcuccugc 840

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cccguccucg acaucuccau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc caaggaccuc cgcuccggcu acgagaccuu caaggucauc 1140

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc ucccaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 116168
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADT79234

<400> 116168
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__ADT79244

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116170
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU25480

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagauc 120

ggcaaccaga accagaccga gaccugcucc cagaacauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaacaacu ucgucgccga gcaggccguc 240

gucuccauga agcucgccgg cuccucccccc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacgac aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaucgagaag 780

ggcaaggucg ucaaguccgu cgagcucaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccggcga gaucaucugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

auccucggcg acaacccccg ccccaacgac cgcaccggcu ccugcggccc cgucucccuc 1020

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cgcaccaagu ccuccuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug caugcgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116171
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU59780

<400> 116171
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116172
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU59789

<400> 116172
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacgucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116173
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU59829

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116174
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116175
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADU59847

<400> 116175

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116176
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU59907

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADU59917

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADU59920

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116179
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116180
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76311

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116181
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<212> RNA
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neuraminidase__InfluenzaA__ADU76313

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116182
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76314

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__ADU76315

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADU76316

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__ADU76317

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116186
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116187
<211> 1410
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neuraminidase__InfluenzaA__ADU76319

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccaagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADU76328

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116197
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116198
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADU76330

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116199
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76331

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116200
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76332

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116201
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADU76333

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76334

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADU76335

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADU76336

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccaagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADU76337

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116206
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76338

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116207
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76339

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116208
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADU76341

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116209
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76342

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADU76343

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116211
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADU76344

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116212
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccaagcucc ccuucaccau cgacaaguga 1410

<210> 116213
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neuraminidase__InfluenzaA__ADU76346

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116214
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<220>
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neuraminidase__InfluenzaA__ADU76347

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADV17285

<400> 116215
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uuccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116216
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV17295

<400> 116216
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116217
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADV17305

<400> 116217
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcuccucccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg cuccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116218
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV17315

<400> 116218
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116219
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADV17325

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116220

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV17335

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116221
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neuraminidase__InfluenzaA__ADV19022

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__ADV41679

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116223
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADV76582

<400> 116223
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADV76590

<400> 116224
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116226
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADV76612

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116227
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADV76623

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116228
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADV76634

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV76645

<400> 116229

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 116230
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADV76667

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 116231
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV76676

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV76697

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__ADV76708

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADV76730

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagacccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caaggacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADV78132

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggcucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__ADW09104

<400> 116237
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW09114

<400> 116238
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116239
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW09123

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116240
<211> 1413
<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116241
<211> 1413
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__ADW09167

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116242
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADW09178

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADW09189

<400> 116243
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116244
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW09211

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

aacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116245
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADW09222

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaacuc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116246
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADW09233

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116247
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADW09244

<400> 116247
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADW09255

<400> 116248
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW09266

<400> 116249
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116250
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<220>
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neuraminidase__InfluenzaA__ADW09277

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__ADW09288

<400> 116251
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116252
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<220>
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neuraminidase__InfluenzaA__ADW09299

<400> 116252
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116255
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116256
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW10486

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW10497

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116258
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<212> RNA
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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccucguc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__ADW10530

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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<400> 116261
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ADW10552

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

aaguccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__ADW10618

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>

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<400> 116273

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

cgcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cggcgacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

cucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116274

<211> 1413
<212> RNA
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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW10779

<400> 116275
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADW10790

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caucaucccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acgccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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neuraminidase__InfluenzaA__ADW10801

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaaca ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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<400> 116283

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__ADW10889

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADW10900

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADW23530

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__ADW54483

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__ADW54494

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaaccgcc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW65826

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__ADW82127

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW82138

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW82149

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__ADW82158

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADW82169

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADW82180

<400> 116300
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116301
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<212> RNA
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neuraminidase__InfluenzaA__ADW82191

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116302
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW82201

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW82211

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116304
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__ADW82221

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116305
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116306
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__ADW82241

<400> 116306
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116307
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neuraminidase__InfluenzaA__ADW82251

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADW82261

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__ADW82271

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__ADW95320

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__ADW95333

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccgccaagu ccaucuccuc ccgcaaggcc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu cgagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__ADX20813

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag accuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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neuraminidase__InfluenzaA__ADX20814

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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neuraminidase__InfluenzaA__ADX21091

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aacggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 116362
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__ADX96759

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucucccuca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaaccaga ccuacgucaa caucuccaac accaacuucg ccgccggcca guccgucguc 240

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaucuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADX98732

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__ADX98761

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcauccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaagacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADX98933

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ggcaaccaga accacaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugauc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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<220>
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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

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ggcuccugcu ucaccaucau gaccgacggc cccuccgacg gccucgccuc cuacaagauc 720

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

aucuggaccu ccgccuccuc caucuccuuc ugcggcguca acuccgacac cgucgacugg 1320

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca ccauggccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__ADY11828

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__ADY17657

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__ADY17668

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccugcga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADZ47851

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__ADZ53101

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucaac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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neuraminidase__InfluenzaA__AEA03755

<400> 116490
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116491
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEA03766

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116492
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03796

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116493
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03806

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEA03817

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03828

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA03838

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEA03849

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03860

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03871

<400> 116499

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caagguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA03898

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEA03909

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03924

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA03935

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03946

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA03957

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__AEA03989

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEA04000

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEA04011

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116511
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEA04022

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116512
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04033

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04044

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04049

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEA04059

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEA04070

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEA04081

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgacguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116519
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04103

<400> 116519
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116520
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEA04125

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116521
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04133

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04144

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116523
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04155

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116524
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04166

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116525
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04177

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116526
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04188

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04199

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04210

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116529
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04229

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116530
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04239

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116531
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA04250

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AEA04260

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116533
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04268

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ugccucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04276

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA04287

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AEA04298

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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neuraminidase__InfluenzaA__AEA04357

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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

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ugggucaacc agaccuacgu caacgucguc gccggcaagg acaccaccuc cgucauccuc 240

gccggcaacu ccucccucug ccccauccgc ggcugggcca ucuacuccaa ggacaacggc 300

guccgcaucg gcuccaaggg cgacgucuuc gucauccgcg agcccuucau cuccugcucc 360

caccucgagu gccgcaccuu cuuccucacc cagggcgccc uccucaacga caagcacucc 420

aacggcaccg ucaaggaccg cucccccuac cgcgcccuca uguccugccc cgucggcgag 480

gcccccuccc ccuacaacuc ccgcuucgag uccgucgccu gguccgccuc cgccugccac 540

gacggcaugg gcuggcucac caucggcauc uccggccccg acgacggcgc cgucgccguc 600

cucaaguaca acggcaucau caccgagacc aucaaguccu ggcgcaagga gauccuccgc 660

acccaggagu ccgagugcgu cugcgucaac ggcuccugcu ucaccaucau gaccgacggc 720

cccuccggcg gccccgccuc cuacaagauc uucaagaucg agaagggcaa ggucaccaag 780

uccaucgagc ucgacgcccc caacucccac uacgaggagu gcuccugcua ccccgacacc 840

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uucgaccaga accucgacua ccagaugggc uacaucugcu ccggcgucuu cggcgacaac 960

ccccgcccca aggacggcaa gggcuccugc ggccccgucu acgucgacgg cgccaacggc 1020

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uccucccgcc agggcuucga gaugaucugg gaccccaacg gcuggaccga gaccgacucc 1140

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uucguccagc accccgagcu caccggccuc gacugcaugc gccccugcuu cugggucgag 1260

cucauccgcg gccgccccaa ggagaacacc aucuggaccu ccggcuccuc caucuccuuc 1320

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<210> 116539
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<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__AEA04379

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<210> 116541
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AEA10306

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEA10316

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEA10326

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AEA10335

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEA72729

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccaagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116575
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEA73532

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEA73543

<400> 116576
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116577
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA73554

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEA73565

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116579
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA73576

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116580
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA73587

<400> 116580
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116581
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA73598

<400> 116581
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116582
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEA73609

<400> 116582
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA73620

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEA73631

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEA73642

<400> 116585
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ggcucccaga acaacaccgg caucugcaag cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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<212> RNA
<213> Artificial Sequence

<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaaca ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__AEA73719

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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<400> 116593
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__AEA73741

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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<211> 1413
<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEA73844

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccauguccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116606
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116607
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116608
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccauguccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEA73924

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 116616
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 116617
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 116620
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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neuraminidase__InfluenzaA__AEA74014

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaacggca ucugcaacgg caccgucguc aaggaguaca acgagaccgu ccgcaucgag 180

cgcgucaucc aguggcacaa caccuccguc gucgaguaca uccccuaccu caacggcggc 240

accuacacca acaacaccga guccgucugc gacgucaagg gcuucgcccc cuucuccaag 300

gacaacggcg uccgcaucgg cucccgcggc cacgucuucg ucauccgcga gcccuucguc 360

uccugcuccc cccgcgagug ccgcaccuuc uuccucaccc agggcucccu ccucaacgac 420

aagcacucca acggcaccgu caaggaccgc ucccccuuca agacccucau guccgucgag 480

gucggccagu cccccaacgu cuaccaggcc cgcuucgagg ccgucgccug guccgccacc 540

gccugccacg acggcaagaa guggaugacc aucggcguca ccggccccga cuccaaggcc 600

gucgccgucg uccacuacgg cggcgucccc accgacauca ucaacuccug ggccggcgac 660

auccuccgca cccaggaguc cuccugcacc ugcauccagg gcgacugcua cugggucaug 720

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cccaacgacg gcaaggucga gugcgucugc cgcgacaacu ggaccggcac caaccgcccc 900

guccucguca ucucccccga ccucuccuac aaggucggcu accucugcgc cggccucccc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccuacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg ucaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgccgaca ucaaccucau gcccaucuga 1410

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacau caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEC13316

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AEC53262

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEC53282

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AEC53292

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEC53302

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaucaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaucgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116660
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG64765

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caucugcaac cagggcauca ucaccuacaa cgucgucgcc 180

ggccaggacu ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucc acuccaagga caacggcauc cgcaucggcu ccaagggcga cgucuucguc 300

auccgcgagc ccuucaucuc cugcucccac cucgagugcc gcaccuucuu ccucacccag 360

ggcgcccucc ucaacgacaa gcacuccaac ggcaccguca aggaccgcuc ccccuaccgc 420

gcccucaugu ccugccccgu cggcgaggcc cccucccccu acaacucccg cuucgagucc 480

gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgaca acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaagau ccuccgcacc caggaguccg agugcaccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ucgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcuca acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacca gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ccgacggcgc caacggcguc aagggcuucu ccuaccgcua cggcaacggc 1020

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<210> 116661
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaaccgcc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEG64837

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG64848

<400> 116663
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug gcucaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116664
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG64859

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcccgaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116665
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG64870

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116669
<211> 1410
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<220>
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neuraminidase__InfluenzaA__AEG64925

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116670
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEG64936

<400> 116670
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga ggacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agcgcgagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguccaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccacguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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gaguucaacu cccccccga caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEG65123

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

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neuraminidase__InfluenzaA__AEG65134

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEG65145

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucucca acucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEG65167

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccgcc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65178

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEG65189

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65200

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEG65211

<400> 116693
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65222

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEG65233

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEG65244

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEG65266

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65277

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65288

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116701
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__AEG65332

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65365

<400> 116706
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116707
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65376

<400> 116707
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116708
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65387

<400> 116708
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116709
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65398

<400> 116709
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116710
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65409

<400> 116710
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116711
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65420

<400> 116711
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116712
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65431

<400> 116712
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116713
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65442

<400> 116713
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116714
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65453

<400> 116714
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116715
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65464

<400> 116715
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagc accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116718
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEG65497

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116721
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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neuraminidase__InfluenzaA__AEG65585

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga ccgcugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AEG65596

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116727
<211> 1410
<212> RNA
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<220>

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116728

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ucgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116729
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65640

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ucgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116730
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEG65651

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116731
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<212> RNA
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neuraminidase__InfluenzaA__AEG65662

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<210> 116732
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<220>
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neuraminidase__InfluenzaA__AEG65673

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65684

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65706

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116737
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 116737

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65761

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116741
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65783

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG65794

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEG65805

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116746
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG79814

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEG79826

<400> 116747
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 116748
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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 116749
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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116750
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neuraminidase__InfluenzaA__AEH59356

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cacccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AEH59366

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcggcguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116754
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<212> RNA
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neuraminidase__InfluenzaA__AEH59368

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116756
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<220>
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neuraminidase__InfluenzaA__AEH59372

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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<400> 116757
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEH59378

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<212> RNA

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<220>
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neuraminidase__InfluenzaA__AEH59384

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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<210> 116762
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 116763
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEH59390

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEH59392

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116765
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116766
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<212> RNA
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neuraminidase__InfluenzaA__AEH59398

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacuacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEH59402

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 116770
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEH59406

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__AEH59412

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 116782

<211> 1410
<212> RNA
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ggcucccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116784
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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEH77273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEH77282

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEI29218

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<400> 116791

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agcgcgagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEI54372

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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neuraminidase__InfluenzaA__AEI54416

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEI54449

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEI54471

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ugcuucuuca ugcagaucgc cguccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEI59982

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccgucgucu ccuccuacgu cugcuccggc 960

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neuraminidase__InfluenzaA__AEI59993

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg cccccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aagugcaacu cccccccaa caaccgcguc augcucugcg agcccaccau caucgagcgc 180

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcuccucccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacggc gacaccggcg gcugguccug gcccgacggc 1380

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<400> 116845

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__AEI87087

<400> 116847
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gucuccguca agcucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116848
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 116850
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccggcguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagaagauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEJ10403

<400> 116855
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEJ10423

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AEJ10433

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaagacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__AEJ10503

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEJ10533

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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<210> 116867
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<212> RNA
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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 116886
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK21372

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK21399

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 116890

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 116891
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<220>
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neuraminidase__InfluenzaA__AEK21429

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEK21439

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEK21459

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 116895
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neuraminidase__InfluenzaA__AEK21469

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116896
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<212> RNA
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK21489

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116898
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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<400> 116899

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gccgcuccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuccgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu accccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaac 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEK28841

<400> 116904
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccaccguc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116905
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK28852

<400> 116905
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa ccgcguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116906
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK28863

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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 116907
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK28874

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK28885

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc uccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK28896

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugcccccgc 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEK28918

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AEK28929

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEK28951

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggcccu cuggaccucc 1320

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ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<400> 116914
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccccaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 116915
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaacuucau gcccaucuga 1410

<210> 116916
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK28984

<400> 116916
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK28995

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116918
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK29006

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK29050

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gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116921
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK29083

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEK29094

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116924
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK29127

<400> 116924
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116925
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK29138

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116926
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK29182

<400> 116926
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116927
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK29204

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaagg uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK29215

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK29237

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaagg uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116930
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK29248

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116931
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK29259

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEK29270

<400> 116932
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116933
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK59839

<400> 116933
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 116934
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98375

<400> 116934
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcgaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116935
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98377

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116936
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98379

<400> 116936
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcgaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116937
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98381

<400> 116937
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116938
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK98383

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116939
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<212> RNA
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neuraminidase__InfluenzaA__AEK98385

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116940
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98387

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116941
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEK98389

<400> 116941
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116942
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK98393

<400> 116942
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116943
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEK98395

<400> 116943

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 116944

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK98397

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK98399

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 116946
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEK98403

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK98405

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEK98407

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL11690

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 116950
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL89300

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AEL89310

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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<400> 116953

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEL89360

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEL89370

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEL89394

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL89424

<400> 116961
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116962
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<212> RNA
<213> Artificial Sequence

<220>
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<400> 116962
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116963
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL89444

<400> 116963
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116964
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL89454

<400> 116964
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116965
<211> 1410
<212> RNA
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<220>
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__AEL89474

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEL89484

<400> 116967
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEL89494

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa ggaguggucc 1200

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEL89524

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116971
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<212> RNA
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neuraminidase__InfluenzaA__AEL89534

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ggcaaccaga accagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaucaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116972
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa ggaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116973
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL89554

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116974
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEL89564

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ggcaaccaga accagaucga gaccugcaac caguccgucg ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 116975
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__AEL89584

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEL89604

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEL89624

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEL89634

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116980
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEL89644

<400> 116980
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116981
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL89654

<400> 116981
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116982
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEL89664

<400> 116982
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116983
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEL89674

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116984
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEL89694

<400> 116984
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116985
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL89704

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116986
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL89714

<400> 116986
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 116987
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL89744

<400> 116987
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 116988
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL89754

<400> 116988
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 116999
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca accucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117000
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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117001
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEL93611

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117002
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL93621

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117003
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL93631

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117004
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEL93641

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccag cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEL94890

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEL95429

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc cccaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagac cugccccaag 240

gucgucgagu accgcuccug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucaccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcucccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aucuccgucc gccucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEM62819

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacgacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 117021
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<212> RNA
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neuraminidase__InfluenzaA__AEM62837

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117022
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEM62846

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117023
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEM62855

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117024
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuucgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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<220>
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neuraminidase__InfluenzaA__AEM62872

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEM92310

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEM92380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caccaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117037
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AEM92440

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 117038
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<212> RNA
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neuraminidase__InfluenzaA__AEM92450

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117039
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEM92460

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEM92470

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117041
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEM92480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEM92490

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEM92500

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ugggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEM92520

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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neuraminidase__InfluenzaA__AEM92550

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcaacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

gacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117058
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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgcccg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEN55466

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aaccucaucc uccagaucgg caacaccauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117060
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacggc 1380

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<210> 117061
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEN55486

<400> 117061

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEN55506

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AEN55516

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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neuraminidase__InfluenzaA__AEN55526

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117065
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEN69429

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117066
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEN69438

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccacaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117067
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEN69484

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaacaaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117068
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEO01627

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaga ucaaccucau gcccaucuga 1410

<210> 117069
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEO01638

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaga ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEO01644

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEO01654

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEO01665

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117073
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgaga ugaccuucac caucgacaag uga 1413

<210> 117074
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO01693

<400> 117074
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaga ucaaccucau gcccaucuga 1410

<210> 117075
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO01711

<400> 117075
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117076
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO37533

<400> 117076
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa ggaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117077
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO37543

<400> 117077
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gcccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccgucaag caggacauca ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117078
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<220>
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neuraminidase__InfluenzaA__AEO72179

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117079
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO88957

<400> 117079
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cacccagacc 120

ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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aacggcgccu acggcaucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 117080
<211> 1350
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO88965

<400> 117080
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

aagaaccagc gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu ccaccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 117081
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO88973

<400> 117081
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ucccucaugc uccagaucgg caacaugauc ucccucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggucga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc augaucaccg acaccaucaa guccuggcgc 600

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aacggcgccu acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1020

cgcaccaagu cccccaacuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1080

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gccgagcucc ccuucaccau cgacaaguga 1350

<210> 117082
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO88982

<400> 117082
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucu ccugguccug gcccgacgac 1320

gccgagcucc ccuucaccau cgacaaguga 1350

<210> 117083
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEO88990

<400> 117083
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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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neuraminidase__InfluenzaA__AEO88998

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ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacgagcag gccuccuaca agaucuucaa gauggagaag 720

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<210> 117085
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<212> RNA
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ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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gccgagcucc ccuucaccau cgacaaguga 1350

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<212> RNA
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ggcaaccagc accaggucga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc augaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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neuraminidase__InfluenzaA__AEO89050

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ggcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccaugg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc gccaggccga gcccaucucc aacaccaagu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca ucuccggcug ggccgucuac 240

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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neuraminidase__InfluenzaA__AEO89075

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ggcaaccuca accaggucga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcaaccagc accaggccga gcccacccgc aacgccaccu uccucaccga gaacgccguc 180

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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ggcaaccaga accaggucga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccauccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacucc 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggacga gcccauccgc aacgccaacg uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggccga gcccauccgc aacgccuccu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggcaaccagc accaggacga gcccauccgc aacgccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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cgcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucaccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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<210> 117099
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<220>
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neuraminidase__InfluenzaA__AEO89156

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cgcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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neuraminidase__InfluenzaA__AEO89174

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cgcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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neuraminidase__InfluenzaA__AEO89183

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ucccucaugc uccagaucgg caacaugauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accagaccga gcccauccgc aacaccaacu uccucaccga gaacaccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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neuraminidase__InfluenzaA__AEO89205

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ggcaaccagc accaggccga gcccauccgc aacgccuccu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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<400> 117103

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gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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ggcaaccagc accaggccga gcccauccgc aacgccuccu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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cgcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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<210> 117106

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<212> RNA
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neuraminidase__InfluenzaA__AEO89248

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cgcguccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaugaagaag 720

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neuraminidase__InfluenzaA__AEO89270

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cgcaaccagc accaggccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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<210> 117108
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neuraminidase__InfluenzaA__AEO89281

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ucccucaugc uccagaucgg caacaucguc uccaucuggg ucucccacuc cauccagacc 120

ggccaccagc agcaggccga gcccaucaag aacaccaacu uccucaccaa gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaccc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ggccaccagc agcaggccga gcccaucaag aacaccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcaaccagc accaggacga gcccauccgc aacgccaacu uccucaccga gaacgccguc 180

gccuccguca cccucgccgg caacuccucc cucugccccg uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 720

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEQ49739

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49740

<400> 117113
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117114
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49741

<400> 117114
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117115
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49742

<400> 117115
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccauccac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117116
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ49743

<400> 117116
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaccaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaacuga 1410

<210> 117117
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49744

<400> 117117

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccucguc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucu uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccaggaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag cagaacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117118
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49745

<400> 117118
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117119
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49746

<400> 117119
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117120
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49747

<400> 117120
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117121
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49748

<400> 117121
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117122
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49749

<400> 117122
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117123
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<212> RNA
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neuraminidase__InfluenzaA__AEQ49750

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaacc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117124
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49751

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cuuccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaacc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117125
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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucgg caccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49753

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117127
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccagu cccaggucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccacu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEQ49759

<400> 117132
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117133
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49760

<400> 117133
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117134
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49761

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggcucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49762

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucauc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117136
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49763

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117137
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49764

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEQ49765

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117140
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49767

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117141
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49768

<400> 117141
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEQ49769

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacau caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgu ccaguccguc 240

gucuccguca agcucgccgg caacuccacc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117161
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ49790

<400> 117161

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117162

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49791

<400> 117162
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49792

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEQ49793

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117165
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117166
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49796

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEQ49797

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEQ49798

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117170
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49799

<400> 117170
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117171
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49800

<400> 117171

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117172
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ49801

<400> 117172

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117173
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49802

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117174
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEQ49803

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccaccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gaccaucuga 1410

<210> 117175
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49804

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117176
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49805

<400> 117176
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117177
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49806

<400> 117177
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117178
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49807

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117179
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49809

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117180
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49811

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117181
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49812

<400> 117181
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117182
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ49813

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117183
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49815

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117184
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<220>
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neuraminidase__InfluenzaA__AEQ49816

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117185
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49820

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117186
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neuraminidase__InfluenzaA__AEQ49821

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49822

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEQ49823

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49824

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117190
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<212> RNA
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neuraminidase__InfluenzaA__AEQ49825

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117191
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49826

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49827

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117193
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ49828

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49829

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117195
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49830

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117196
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49831

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49832

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117198
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49833

<400> 117198
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117199
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49835

<400> 117199
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117200
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49836

<400> 117200
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117201
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49838

<400> 117201
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117202
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49839

<400> 117202
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49840

<400> 117203
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEQ49841

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117205
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49842

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117206
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49843

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117207
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49844

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117208
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49845

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agcgcgagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117209
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49846

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117210
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49850

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117211
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49851

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau cauggagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117212
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49852

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117213
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEQ49969

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117214
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEQ49970

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<210> 117215
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEQ54954

<400> 117215

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<210> 117216

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AER08645

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117217
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08649

<400> 117217
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagcucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117218
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08657

<400> 117218
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117219
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08659

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117220
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08661

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcgacca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117221
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08663

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117222
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08665

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117223
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08669

<400> 117223
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccacc 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117224
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AER08671

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

ggcuucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccacc 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117225
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08673

<400> 117225

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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<400> 117226
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117227
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AER08677

<400> 117227
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117228
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08679

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117229
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AER08681

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacgacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117230
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<220>
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neuraminidase__InfluenzaA__AER08683

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AER08685

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AER08687

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AER08689

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc acccucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AER08691

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AER08693

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gaguucaacu ccccccccaa gaaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccacc 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AER92724

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117240
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84165

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucucc gcccccaacu ucuacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117241
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84176

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AET84187

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg cauggacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AET84198

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AET84209

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaagg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucaac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117245
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84231

<400> 117245
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccacacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc uccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117246
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AET84242

<400> 117246
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117247
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AET84253

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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117248
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AET84264

<400> 117248
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ucccucaugu uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AET84275

<400> 117249
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117250
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AET84286

<400> 117250
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117251
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AET84297

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg acaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacacca ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84308

<400> 117252
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84319

<400> 117253
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaaccg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AET84330

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117255
<211> 1413
<212> RNA
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<220>
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<400> 117255
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagauc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117256
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AET84363

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117257
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AET84374

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84396

<400> 117258
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AET84407

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AET84418

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgccaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AET84429

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu cuccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccaggaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AET84451

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucaccaaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucacc gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEV53421

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEV53425

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53427

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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<220>
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neuraminidase__InfluenzaA__AEV53429

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117269
<211> 1410
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEV53431

<400> 117269

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 117270

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neuraminidase__InfluenzaA__AEV53435

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53437

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaccc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53441

<400> 117273
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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53447

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<400> 117279

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEV53457

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg cgucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEV53459

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53461

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117284
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53463

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117285
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgaccgccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117286
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53467

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117287
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEV53469

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117288
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53471

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117289
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<220>
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neuraminidase__InfluenzaA__AEV53473

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEV53479

<400> 117292
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117293
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53481

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53495

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca accucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53501

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117304
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEV53503

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117306
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53507

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117307
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<220>
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neuraminidase__InfluenzaA__AEV53509

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53511

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53513

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEV53515

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEV53517

<400> 117311
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEV53527

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53537

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117322
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53539

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117323
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEV53541

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accgagaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEV53543

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53545

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEV53547

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53549

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEV53551

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEV53555

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aaccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117331
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53557

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117332
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117333
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEV53561

<400> 117333

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEV53563

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccu ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117335
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEV53565

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucaacggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc cccucaccau cgacaaguga 1410

<210> 117336
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53567

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgc cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucaacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117337
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53569

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEV53571

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEV53581

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gagaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccaugg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10646

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEW10736

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10766

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__AEW10776

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AEW10786

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117371
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<212> RNA
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neuraminidase__InfluenzaA__AEW10816

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10826

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10836

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW10846

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10856

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__AEW10866

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucaucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEW10936

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW10956

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEW11076

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117398
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117399
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEW11096

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117400
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEW11106

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117401
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEW11116

<400> 117401
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117402
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEW11126

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117403
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11136

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117404
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117405
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEW11156

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117406
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11166

<400> 117406
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__AEW11176

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 117408
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11186

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AEW11206

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11216

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11226

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW11246

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEW11265

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gccccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117418
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW11285

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__AEW11295

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117420
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AEW11305

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117421
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AEW11325

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AEW25308

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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neuraminidase__InfluenzaA__AEW25317

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc ccccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117428
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cugggucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW25343

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccguc ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaac gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AEW25358

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaccuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW25361

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEW25379

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEW25387

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucgacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgagcccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucggcaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEW25432

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEW25436

<400> 117444
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEW25440

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEW25448

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW25456

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW25464

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEW25474

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuccaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW25484

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgaccac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEW25494

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acuccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

accuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgc cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEW25511

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgucg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEW25530

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

uacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacc accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AEW25584

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AEW25602

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AEW25664

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucaccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__AEW25671

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEW25680

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AEW25698

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__AEW25708

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33324

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcgcca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AEX33379

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AEX33390

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEX33412

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__AEX33434

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117483
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33445

<400> 117483
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117484
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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<400> 117484
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggagaaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117485
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEX33555

<400> 117485

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117486

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33610

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac aacaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33828

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEX33839

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEX33861

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ucccucaugc uccaggucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccgucg cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggccagguca ccaaguccgu cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX33872

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcagugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEX33883

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ccggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc caugaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33927

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

gaguccccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33938

<400> 117495

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AEX33949

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccgucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX33971

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaccgucua ccucaccaac accaccaccg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX33993

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEX34026

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEX34036

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34103

<400> 117502
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccaagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117503
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34114

<400> 117503
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccccaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117504
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34137

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34191

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117506
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34224

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34235

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34246

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34257

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEX34268

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AEX34278

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117512
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34310

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ggcacccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34321

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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<210> 117514
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34356

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117515
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34367

<400> 117515
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117516
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34378

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaac 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117518
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX34432

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34443

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AEX34498

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEX34520

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEX34531

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AEX34542

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34553

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34564

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117531
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX34575

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34586

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34597

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34608

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34619

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34630

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AEX34641

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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34653

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccgucg cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggccagguca ccaaguccgu cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccaggaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117539
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<220>

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<400> 117539

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccccg cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccgcc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117540

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34686

<400> 117540
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117541
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34760

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117542
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34771

<400> 117542
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX34782

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34793

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34804

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguсc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AEX34815

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucaccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AEX34826

<400> 117547
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34837

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

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<400> 117549

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucaucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

aucuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

gcccccguca cccucaucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34892

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX34903

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEX34914

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AEX34925

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AEX34936

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117558
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34958

<400> 117558
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117559
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX34969

<400> 117559
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117560
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEX34980

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117561
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEX34991

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117562
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35002

<400> 117562
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucaucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac cgcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117563
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35013

<400> 117563
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117564
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35024

<400> 117564
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35035

<400> 117565
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117566
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35046

<400> 117566
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX35057

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117569
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<212> RNA
<213> Artificial Sequence

<220>
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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX35101

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__AEX35112

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccuccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AEX35123

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AEX35145

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AEX35156

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgucgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaagggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AEX35167

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117577
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX35178

<400> 117577
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

gagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagucccg cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccgcc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117578
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX35189

<400> 117578
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117579
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35200

<400> 117579
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgucga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcacc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaagaccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccggcaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117580
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35211

<400> 117580
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117581
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35222

<400> 117581
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ugcuucuuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117582
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AEX35233

<400> 117582
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117583
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35244

<400> 117583
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ugcuucuuca ugcagaucgc cauccucauc aacaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117584
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35255

<400> 117584
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117585
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35266

<400> 117585
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ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117586
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35277

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcauccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caccaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cccccgcgac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 117587
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35288

<400> 117587
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117588
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35299

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35310

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35321

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117591
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35332

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX35354

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35409

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEX35420

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35431

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagaaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEX35453

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX35464

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX35475

<400> 117603

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117606
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35508

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEX35519

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEX35530

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcagugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35541

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35552

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX35563

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEX35585

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX35596

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117614
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35607

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117615
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX35618

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gagcucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcuaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117616
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX35640

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaagug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga caacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

cccaucgucg acaucaacau gaaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117617
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX35651

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg acaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117618
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36105

<400> 117618
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117619
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36116

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117620
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36127

<400> 117620
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug gcucaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117621
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36149

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg acaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccacc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117622
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36160

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117623
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36171

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117624
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36193

<400> 117624
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaug cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117625
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX36204

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36215

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AEX36226

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117628
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AEX36237

<400> 117628
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaagug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

cccaucgucg acaucaacau gaaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36248

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117630
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36259

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117631
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36270

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117632
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36281

<400> 117632
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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36314

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEX36336

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEX36347

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaucau caucgagcgc 180

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEX36369

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEX36391

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgca ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugcuccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccauccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36435

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36446

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEX36457

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEX36468

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccaagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEX36479

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEX36490

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gaguucuccu accccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEX36501

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX36512

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccgccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcgaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEX36556

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AEX36578

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AEX36600

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AEX36622

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagaaccaga accagcccga gaucugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacgucucc aacaccaacu ucgucgccga gcaggccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccacuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aagaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca aggucuucaa gaucgagcgc 780

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

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<210> 117664
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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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<210> 117665
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neuraminidase__InfluenzaA__AEX96924

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AEY69156

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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<212> RNA
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neuraminidase__InfluenzaA__AEY69167

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AEY69178

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__AEY69189

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AEY69283

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69305

<400> 117679
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117680
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69316

<400> 117680
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcaa cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117681
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AEY69788

<400> 117681

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcaa cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117682

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69799

<400> 117682
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117683
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69810

<400> 117683
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117684
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69832

<400> 117684
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117685
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69843

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117686
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69854

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117687
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69876

<400> 117687
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117688
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY69887

<400> 117688
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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<212> RNA
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<400> 117691

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEY70019

<400> 117698
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117699
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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117700
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY70270

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117701
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY70281

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117702
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AEY70303

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117703
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117704
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEY70325

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ugcuucuuca ugcagaucgc cauccucaug accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 117705
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEY70336

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg acaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<220>
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neuraminidase__InfluenzaA__AEY70358

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AEY70379

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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<210> 117717
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117718
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117719
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117720
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 117721
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 117722
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFB70239

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 117723
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFB70249

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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<220>
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neuraminidase__InfluenzaA__AFB70259

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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<210> 117725
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<212> RNA
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ggcgaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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<210> 117726
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<220>
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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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neuraminidase__InfluenzaA__AFB70369

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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<212> RNA
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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 117736

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neuraminidase__InfluenzaA__AFB70389

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117737
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117738
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 117739
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117741
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFB78128

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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFC62078

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagcuc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacgacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AFC62079

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<210> 117744
<211> 1410
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<211> 1410
<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFC62082

<400> 117745

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117746
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFD63529

<400> 117746
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117747
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63540

<400> 117747
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117748
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63551

<400> 117748
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac ggccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117749
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63562

<400> 117749
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117750
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD63573

<400> 117750
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucggccgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117751
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63584

<400> 117751
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117752
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63595

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117753
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63606

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117754
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63628

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117755
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD63639

<400> 117755
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117756
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117757
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFD63661

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac uccaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117758
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63672

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117759
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63683

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac ggccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117760
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63694

<400> 117760
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ugcuuccuca ugcagaucgc cauccucguc accaccauca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117761
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63705

<400> 117761
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63716

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63727

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117764
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63738

<400> 117764
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117765
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63749

<400> 117765
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117766
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63760

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117767
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD63771

<400> 117767
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD63782

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117769
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63793

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63804

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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<211> 1410
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<220>
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggagaaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117783
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD63947

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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<212> RNA
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<220>
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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117785
<211> 1410
<212> RNA
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<220>
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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<212> RNA
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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64057

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117793
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD64079

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117795
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD64090

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117796
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64101

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64112

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64134

<400> 117799

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117800
<211> 1410
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<220>
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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucaucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117811
<211> 1410
<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117812
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucaucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117813
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD64372

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64383

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD64394

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AFD64405

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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<212> RNA
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<220>
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFD64438

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117820
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117822
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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<400> 117822
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98120

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117824
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98131

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117825
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98142

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117826
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98164

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117827
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98175

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117828
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98186

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117829
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117830
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD98208

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaagaag caggacauca ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117831
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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucga cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuccug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117832
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AFD98229

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117833
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98240

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117834
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD98251

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFD98262

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117836
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117837
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98283

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117838
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98293

<400> 117838
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117839
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98313

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117840
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD98323

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117841
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98333

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFD98343

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 117843
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFD98354

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117844

<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98365

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gaguucuacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98376

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gaguucaacu ucccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 117846
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<220>
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neuraminidase__InfluenzaA__AFD98387

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98398

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117848
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98409

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117849
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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117850
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98431

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117851
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98442

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cgccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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ugcuucuuca uccagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117853
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98463

<400> 117853

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AFD98484

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 117856
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<220>
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neuraminidase__InfluenzaA__AFD98495

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc aacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98506

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117858
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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117859
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117860
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98539

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AFD98550

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 117862
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFD98561

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFD98572

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFE02944

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFE47627

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFF18509

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117868
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggcucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccuc cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117872
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccagc acaaggccga gcccaucucc aacaccaacu uccucaccga gaaggccguc 180

gccuccguca agcucgccgg caacuccucc cucugcccca ucaacggcug ggccgucuac 240

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccauccgc gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117886
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG29045

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117887
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117888
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG31073

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gucaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117890
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31093

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117896
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgucgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31273

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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neuraminidase__InfluenzaA__AFG31283

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 117916
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117924
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117925
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFG31449

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117926
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31459

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 117927
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<220>
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neuraminidase__InfluenzaA__AFG31469

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117928
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 117929
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG31499

<400> 117929

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117930
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 117931
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31519

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 117932
<211> 1410
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neuraminidase__InfluenzaA__AFG31529

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117933
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<212> RNA
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neuraminidase__InfluenzaA__AFG31539

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117934
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31549

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117935
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117936
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31569

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117937
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31579

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117938
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31589

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117939
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31599

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117940
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 117941
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 117942
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31629

<400> 117942
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117943
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG31639

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117945
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG31659

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117946
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 117947
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG71868

<400> 117947
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG71890

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFG71901

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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neuraminidase__InfluenzaA__AFG71988

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFG72121

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ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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neuraminidase__InfluenzaA__AFG72143

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 117971
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG72331

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117972
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG72353

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgacuccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117973
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFG72364

<400> 117973

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117974

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG72430

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu ccccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117980
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccauca agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117981
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72562

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117982
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFG72584

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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<400> 117983

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72628

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72639

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72672

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFG72683

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga gguccacgac cgcacccccu accgcacccu ccucaugaac 480

gagcucggcg uccccuucca ccucggcacc aagcaggucu gcaucgccug guccuccucc 540

uccugccacg acggcaaggc cuggcuccac gucugcguca ccggccacaa cgagaacgcc 600

accgccuccu ucaucuacga cggccgccuc gucgacucca ucggcuccug guccaagaac 660

auccuccgca cccaggaguc cgagugcguc ugcaucaacg gcaccugcac cgucgucaug 720

accgacggcu ccgccuccgg ccgcgccgac accaagaucc ucuucaucga ggagggcaag 780

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ccccgcuacc ccggcguccg cugcgucugc cgcgacaacu ggaagggcuc caaccgcccc 900

aucgucgaca ucaacgucaa ggacuacucc aucgucuccu ccuacgucug cuccggccuc 960

gucggcgaca ccccccgcaa gaacgacucc uccuccuccu cccacugccu caaccccaac 1020

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aaccgcuccg gcuacuccgg caucuucucc gucgagggca aguccugcau caaccgcugc 1260

uucuacgucg agcucauccg cggccgcaag caggagaccg aggucuggug gaccuccaac 1320

uccaucgucg ucuucugcgg caccuccggc accuacggca ccggcuccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72705

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117991
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFG72716

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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<210> 117992
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG72738

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcagugc 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72749

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 117994
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<220>
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neuraminidase__InfluenzaA__AFG72760

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72771

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72782

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFG72793

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFG72804

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccaa gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG72826

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118000
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG72837

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118001
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG72848

<400> 118001
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

uccgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aaguacaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcac cugcaccguc 720

gucaugaccg acggcuccgc cuccggcaag gccgacacca agauccucuu caucgaggag 780

ggcaagauca uccacaucuc cacccucucc ggcuccgccc agcacgucga ggagugcucc 840

ugcuaccccc gcuaccccgg cguccgcugc gucugccgcg acaacuggaa gggcuccaac 900

cgccccaucg ucgacaucaa cgucaaggac uacuccaucg ucuccuccua cgucugcucc 960

ggccucgucg gcgacacccc ccgcaagaac gacuccuccu ccuccuccca cugccucgac 1020

cccaacaacg aggagggcgg ccacggcguc aagggcuggg ccuucgacga cggcaacgac 1080

gucuggaugg gccgcaccau cuccgagaag cuccgcuccg gcuacgagac cuucaagguc 1140

aucgagggcu gguccaagcc caacuccaag cuccagauca accgccaggu caucgucgag 1200

cgcggcaacc gcuccggcua cuccggcauc uucuccgucg agggcaaguc cugcaucaac 1260

cgcugcuucu acgucgagcu cauccgcggc cgcaaggagg agaccgaggu cugguggacc 1320

uccaacucca ucgucgucuu cugcggcacc uccggcaccu acggcaccgg cuccuggccc 1380

gacggcgccg acaucaaccu caugcccauc uga 1413

<210> 118002
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG72859

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caucguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118003
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG72870

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccaccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72892

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggagaaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72903

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118006
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG72936

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ugcuucuuca uccagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG72958

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 118009
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG98822

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccuccuc caaccagguc augcucugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagac cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 118010
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG98855

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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<220>
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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gagugcgacu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__AFG98899

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau cgucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaagug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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neuraminidase__InfluenzaA__AFG99141

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gagaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118036
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99152

<400> 118036
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gaguucuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118037
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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<400> 118037

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118038
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 118038

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucauggagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118039
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99185

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aagaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99196

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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu ccucccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 118041
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<220>
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neuraminidase__InfluenzaA__AFG99207

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99229

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFG99240

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gagugcuccu cccccccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118047
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99284

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucacca agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccuc caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99295

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucaucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFG99317

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucga cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118050
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99328

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacguccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118051
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<220>
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neuraminidase__InfluenzaA__AFG99350

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118052
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99361

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99383

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99416

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__AFG99438

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu ccgccaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118060
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<212> RNA

<213> Artificial Sequence

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<210> 118061
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118063
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118064
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99515

<400> 118064
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118065
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99526

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99537

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118067
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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118068
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99559

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118070
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<212> RNA
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neuraminidase__InfluenzaA__AFG99581

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118071
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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118072
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118073
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG99614

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99625

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118075
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99636

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118076
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99658

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga acaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118077
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFG99680

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc auccucugcc agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118078
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99691

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaccaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118079
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<212> RNA
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neuraminidase__InfluenzaA__AFG99704

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118080
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99715

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118081
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFG99726

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118082

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG99737

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gacugcaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118084
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG99759

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99770

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gagugcaacu cccccccaa caaccagauc augcucugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118086
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<212> RNA
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<220>
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gagugcuccu cccccccaa caaccagguc augcucugcc agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFG99825

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFG99836

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFG99869

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118095
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<212> RNA
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFG99946

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caccaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118102
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFG99968

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118103
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFG99979

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccaggcc augcucugcg agcccaagau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00002

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc auccccugcc agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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aaggucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118106
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00013

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00024

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga acaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118110
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00057

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacguccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00068

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118112
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00079

<400> 118112
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00090

<400> 118113
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118114
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00101

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118115
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00112

<400> 118115
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118116
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00123

<400> 118116
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118117
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00156

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118118
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00167

<400> 118118
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118119
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00178

<400> 118119
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucaucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118120
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00189

<400> 118120
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gaguacaacu cccccccaa caaccagguc augcucugcg agcccaagau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118121
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00200

<400> 118121
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118122
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00211

<400> 118122
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118123
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00222

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacaa caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118124
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AFH00233

<400> 118124
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118125
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00244

<400> 118125
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccucuacuu caagcaguac 120

gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau cgucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118126
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00255

<400> 118126
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118127
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00266

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccuc caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00299

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00310

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu ccucccccaa caaccagguc auccccugcc agcccaccau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu ccuccccccaa caaccagguc auccccugcc agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacucccucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00332

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagggcug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00343

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccuc caaccaggcc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>

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cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118136

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neuraminidase__InfluenzaA__AFH00365

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFH00376

<400> 118137
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00387

<400> 118138
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucuccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118139
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcgccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00409

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00420

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00431

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

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uggaugggcc gcaccaucuc cgaggagucc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH00442

<400> 118143
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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg aggucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00464

<400> 118145

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00486

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH00497

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccauca agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118149
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH00508

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ugcuuccuca ugcagaucgc cauccucguc aucaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00519

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00530

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00541

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFH00563

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFH00574

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gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaagau caucgagcgc 180

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH00585

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccauca agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caagguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccuc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118157
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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118158
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00607

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00618

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118160
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00629

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ugcuuccuca ugcagaucac cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaagggcau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00640

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118162
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH00662

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFH00673

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00684

<400> 118165
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118166
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00695

<400> 118166
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gagcgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118167
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00706

<400> 118167
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118168
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00728

<400> 118168
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcaacca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc gagcaggaga cccgcguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118169
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00739

<400> 118169
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc ggccaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118170
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00750

<400> 118170
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgagucc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc gagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118171
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFH00761

<400> 118171
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118172
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00783

<400> 118172
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaaguuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118173
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00794

<400> 118173
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118174
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH00805

<400> 118174
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__AFH34942

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaagau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFH34956

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucuacg agcccaccau caucgagcgc 180

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFH74468

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgagg agggcgacaa cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH74469

<400> 118184
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gccccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118185
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH74480

<400> 118185
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118186
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74491

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118187
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74502

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcaa cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118188
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74513

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118189
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFH74524

<400> 118189

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccaccauc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccgucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118190

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74535

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118191
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74546

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118192
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74557

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118193
<211> 1410
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<220>
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neuraminidase__InfluenzaA__AFH74568

<400> 118193
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118194
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74579

<400> 118194
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74590

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau guccgucuga 1410

<210> 118196
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74601

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74612

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

uccaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118199
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74634

<400> 118199

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118201
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74656

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFH74667

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118203
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<212> RNA
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neuraminidase__InfluenzaA__AFH74678

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118204
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118205
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74700

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118206
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74711

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118207
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74722

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118208
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74733

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118209
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74744

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74755

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118211
<211> 1410
<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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neuraminidase__InfluenzaA__AFH74777

<400> 118212
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118213
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<212> RNA
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neuraminidase__InfluenzaA__AFH74788

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118214
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFH74799

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74810

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74821

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgac ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118217
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH74832

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH74854

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFH74865

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccgucuga 1410

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neuraminidase__InfluenzaA__AFH74876

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

<210> 118224
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFH74909

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118226
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74931

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74942

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFH74953

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFH74964

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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neuraminidase__InfluenzaA__AFH75391

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcaacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccauga agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118250
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ74451

<400> 118250
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cggcggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ74462

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ74517

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua caugaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118253
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFJ74564

<400> 118253

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaccg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118254
<211> 1413
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<220>
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<400> 118254

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccuccu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118255
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<220>
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neuraminidase__InfluenzaA__AFJ74640

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccggcu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcgccgagc uccccuucac caucgacaag uga 1413

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gaguucaacu cccccccaa caaccagguc auccucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaucug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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<220>
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccuccu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ74783

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFJ74834

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ75039

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccuccg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcggc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFJ75050

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccguccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccgc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccaacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ75104

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ75114

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118273
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ75452

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ75463

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ75552

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuccucca ucuccuucug cggcgucaac uccgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AFJ75574

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__AFJ75585

<400> 118277
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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFJ75596

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AFJ76122

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AFJ76134

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccaugg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AFJ76146

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcauccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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neuraminidase__InfluenzaA__AFJ77433

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ugcuuccuca ugcagaucgu cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaccgac uccuccuccu ccuccgacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug cgucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118297
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<220>

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<400> 118297

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ77465

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caagaacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118299
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77476

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ77487

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFJ77498

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ggcaacaugu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFJ77509

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFJ77542

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<400> 118307

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<212> RNA
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cucaccaaca ccaccaucga gaaggagauc ugccccaagc ucgccgagua ccgcaacugg 180

uccaagcccc agugcaacau caccggcuuc gcccccuucu ccaaggacaa cuccauccgc 240

cucuccgccg gcggcgacau cugggucacc cgcgagcccu acgucuccug cgaccccgac 300

aagugcuacc aguucgcccu cggccagggc accacccuca acaacggcca cuccaacgac 360

accguccacg accgcacccc cuaccgcacc cuccucauga acgagcucgg cgucccccuuc 420

caccucggca ccaagcaggu cugcaucgcc ugguccuccu ccuccugcca cgacggcaag 480

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<212> RNA
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neuraminidase__InfluenzaA__AFJ77597

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFJ77663

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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucaucc acaucuccca gcucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ77674

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gagugcaacu cccucccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ77696

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118319
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFJ77707

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ77718

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77762

<400> 118324
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118325
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77773

<400> 118325
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgagcgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118326
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77784

<400> 118326
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118327
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77795

<400> 118327
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118328
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77806

<400> 118328
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118329
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77817

<400> 118329

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFJ77828

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118331
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77839

<400> 118331
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118332
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77850

<400> 118332
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccaagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118333
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ77861

<400> 118333
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagaa gugccccaag 240

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFJ78070

<400> 118352
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaagug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118353
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78081

<400> 118353
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac aacuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaugaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118354
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78092

<400> 118354
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccaacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ucgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaacaucau gcccaucuga 1410

<210> 118355
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78103

<400> 118355
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccuccucggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118356
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78114

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gagcucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

uccaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118357
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78125

<400> 118357
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau gugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118358
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78136

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118359
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78147

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118360
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78158

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118361
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78169

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFJ78180

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggacuac uccaucgucu cccgcuacgu cugcuccggc 960

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<212> RNA
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neuraminidase__InfluenzaA__AFJ78191

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78202

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ugcuucuuca ugcagaccgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaucaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78213

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcucaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78224

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFJ78235

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ78246

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gaguucaacu cccccccaa caaccaggcc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFJ78268

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78279

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFJ78290

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78312

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccugggag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccgcc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118373
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFJ78323

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118374

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78334

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118375
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78345

<400> 118375
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118376
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78356

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgucgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc aucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78367

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

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neuraminidase__InfluenzaA__AFJ78378

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccacau ggagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78389

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFJ78400

<400> 118380
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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<212> RNA
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccuccu uccacuacga ggagugcucc 840

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaaca acaccuacgu caacaucaac aacaccaacg ucgucgccga gaaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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neuraminidase__InfluenzaA__AFJ78642

<400> 118399
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118400
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78653

<400> 118400
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

ugcuaccccg acaccggcau cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118401
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78664

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118402
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78674

<400> 118402
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118403
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78684

<400> 118403
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118404
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78694

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118405
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFJ78704

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118406
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFJ78714

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118407
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78724

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118408
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78734

<400> 118408
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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neuraminidase__InfluenzaA__AFJ78834

<400> 118418
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118419
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78844

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118420
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu ccucaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118421
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78864

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118424
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFJ78894

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AFJ78904

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118426
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFJ78914

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFJ78924

<400> 118427

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu cgacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagauccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacga gaccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AFK14240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFK14257

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFK14274

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFK14281

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccgacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AFK14325

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagcgc 780

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neuraminidase__InfluenzaA__AFK14334

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AFK14352

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFK14360

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AFK14504

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFK14651

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFK14680

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFK14733

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFK14781

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFK14790

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFK14800

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFK14824

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

uggaucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFK14856

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFK14879

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFK14894

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFK14903

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgucgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118561
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neuraminidase__InfluenzaA__AFK75008

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118562
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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118563
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFK75028

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118564
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFK75038

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118565
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFK75048

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118566
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFK75058

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118567
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFK75078

<400> 118568
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118569
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<220>
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neuraminidase__InfluenzaA__AFK75088

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFK75098

<400> 118570
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 118571
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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacca gaucggcuac 900

aucugcuccg gcgucuucgg cgacaacccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ccgacggcgc caacggcguc aagggcuucu ccuaccgcua cggcaacggc 1020

gucuggaucg gccgcaccaa guccgacucc ucccgccacg gcuucgagau gaucugggac 1080

cccaacggcu ggaccgagac cgacucccgc uucuccgucc gccaggacgu cgucgccaug 1140

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<220>
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neuraminidase__InfluenzaA__AFM68968

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacgu caaggacuac uccaucgccu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118581
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<220>
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neuraminidase__InfluenzaA__AFM68979

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcggca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118582
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFM68990

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcggca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118583
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM71723

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118584
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM71734

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118585
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM71745

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFM71771

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagaag 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM71782

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM71794

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFM71805

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

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neuraminidase__InfluenzaA__AFM71827

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<212> RNA
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neuraminidase__InfluenzaA__AFM71849

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

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cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

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augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

aucuggaccu ccgccuccuc caucuccuuc ugcggcguca acuccgacac cgucgacugg 1320

uccuggcccg acggcgccga gcucccccuuc uccaucgaca aguga 1365

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neuraminidase__InfluenzaA__AFM71860

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM71871

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaagug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaagug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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<220>
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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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gagugcuccu cccccccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccgucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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<220>
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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<220>
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<400> 118611

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacacc 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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neuraminidase__InfluenzaA__AFM72101

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gagugcuccu cccccccaa caaccaggcc augcccugcg agcccaccau caucgagcgc 180

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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ggcgccgaca ucaaccucau gcccaucuga 1410

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<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72145

<400> 118617
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cgccaccauc 60

ugcuuccuca ugcagaucgc cauccucgcc aucaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaccaccg agaucgucua ccucaccaac accaccaucg agaaggaggu cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118618
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFM72156

<400> 118618
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118619
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72167

<400> 118619
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccgag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118620
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72178

<400> 118620
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccgag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug cuggaacccc 1020

aacaacgaga agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118621
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72189

<400> 118621
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg cgacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaagcccaa cuccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118622
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFM72200

<400> 118622
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg cgacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118623
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72211

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118624
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72222

<400> 118624
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118625
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72233

<400> 118625
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118626
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72249

<400> 118626
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AFM72315

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucuccu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFM72447

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFM72458

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFM72469

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augaugugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augaugugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AFM72557

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFM72579

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__AFM72802

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ggcucccaga accacaccgg caugugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau ggagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118655
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFM72813

<400> 118655

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caugugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118656

<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72824

<400> 118656
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caugugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

acccccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccauccac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugcaag accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ucaaguccau ggagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccgaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcuccucca ucuccuucug cggcgucaac uccgacaucg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 118657
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72835

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118658
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72845

<400> 118658
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118659
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72855

<400> 118659
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118660
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72865

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118661
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72875

<400> 118661
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caaguccgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72886

<400> 118662
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72897

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118664
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neuraminidase__InfluenzaA__AFM72908

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72919

<400> 118665

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacac caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccgucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFM72941

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFM72952

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM72963

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFM72974

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFM72985

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFM72996

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__AFM73007

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118674
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFM73018

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118675
<211> 1410
<212> RNA
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118676
<211> 1410
<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcau cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFM73048

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFM73058

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFM73068

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFM73480

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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ggcaaccagc accaggccga guccaucucc aacaccaacc cccucaccga gaaggccguc 180

gccuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acaacauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 540

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aacgacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 660

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neuraminidase__InfluenzaA__AFM85180

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gagugcaacu ccucccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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<212> RNA
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<220>
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcua cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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<400> 118687

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

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cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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<220>
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gagugcuccu cccccccaa caaccagguc augcccugcc agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN11840

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN11841

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AFN11842

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccaaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucggccucau gcccauguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN11845

<400> 118693
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcuccu cccccccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaagc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cgagcgcgcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac cgcuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcaacca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucgg cgaggagcuc cgccucggcu acgagaccuu caaggucauc 1140

ggcggcuggu ccacccccaa cuccaagcuc cagaucaacc gccaggucau cgucgacucc 1200

aagaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118694
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN11847

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca caacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccuccuacug ccucaacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN11848

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucggcccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN11850

<400> 118696
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc ggccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN11851

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ugccuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucacca agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaaccgcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcca cgacgagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccuacug ccgcaacccc 1020

aacaacgaga agggcuccca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgaggagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN11853

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN11855

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ugcuucuuca ugcagaccgc cauccucauc accaucguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 118700
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<220>
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neuraminidase__InfluenzaA__AFN11857

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN17373

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118702
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17383

<400> 118702
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118703
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17393

<400> 118703
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118704
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN17403

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118705
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17413

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118706
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17423

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118707
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17433

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17443

<400> 118708
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17453

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 118710
<211> 1410
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<220>
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neuraminidase__InfluenzaA__AFN17459

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118711
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<220>
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neuraminidase__InfluenzaA__AFN17469

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118712
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17479

<400> 118712
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118713
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN17489

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118714
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17499

<400> 118714
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118715
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17509

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118716
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17519

<400> 118716
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118717
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17529

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118718
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17539

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118719
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17549

<400> 118719
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118720
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AFN17559

<400> 118720
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118721
<211> 1410

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17569

<400> 118721
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118722
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17575

<400> 118722
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118723
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17581

<400> 118723
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118724
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17587

<400> 118724
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118725
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17597

<400> 118725
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17607

<400> 118726
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN17617

<400> 118727
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118728
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17627

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118729
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17637

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AFN17647

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118731
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<212> RNA
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<220>

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<400> 118731

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118732

<211> 1410
<212> RNA
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<220>
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<400> 118732
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118733
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17677

<400> 118733
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118734
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17687

<400> 118734
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118735
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17697

<400> 118735
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118736
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN17717

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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<210> 118738
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17727

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118739
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17737

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118740
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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<400> 118740
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118741
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN17749

<400> 118741

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118742
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN17759

<400> 118742
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118743
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17769

<400> 118743
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118744
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17775

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118745
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17785

<400> 118745
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaccuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118746
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17795

<400> 118746
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118747
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17805

<400> 118747
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118748
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17815

<400> 118748
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118749
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neuraminidase__InfluenzaA__AFN17825

<400> 118749
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118750
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17835

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118751
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN17845

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17855

<400> 118752
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17865

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118754
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17875

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AFN17905

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118758
<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<210> 118759
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<220>
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neuraminidase__InfluenzaA__AFN17921

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118760
<211> 1410
<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc cgcggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118761
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17941

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118762
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17951

<400> 118762
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118763
<211> 1410
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<220>
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neuraminidase__InfluenzaA__AFN17961

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118764
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN17971

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 118765
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN17981

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118766
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<212> RNA
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neuraminidase__InfluenzaA__AFN17991

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118767
<211> 1410
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neuraminidase__InfluenzaA__AFN18001

<400> 118767
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN18011

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118769
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118770
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18118

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caagaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18122

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN18128

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118784
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<212> RNA
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neuraminidase__InfluenzaA__AFN18134

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118786

<211> 1410
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neuraminidase__InfluenzaA__AFN18138

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN18140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118788
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<212> RNA
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neuraminidase__InfluenzaA__AFN18144

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN18150

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118790
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18156

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN18160

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__AFN18166

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaagacc 180

ugggucaacc agaccuacgu caacaucucc aacgccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118795
<211> 1410
<212> RNA
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<220>
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<400> 118795

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118796
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18184

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118797
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18190

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118799
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18202

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccgcuccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN18208

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AFN18210

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc gccuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cucaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118802
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18216

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AFN18226

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN18232

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118807
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18246

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118808
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18256

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118809
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18262

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18268

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118811
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18270

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<210> 118812
<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN18274

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18282

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118815
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18304

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118816
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18306

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AFN18308

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118818
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18314

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18320

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118820
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18326

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aaccuccucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118821
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18336

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118822
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18346

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118823
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18356

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118824
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18366

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118826
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFN18382

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118827
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18392

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118828
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18402

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118829
<211> 1410

<212> RNA
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neuraminidase__InfluenzaA__AFN18412

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118830
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18422

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118831
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18432

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 118832
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<212> RNA
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neuraminidase__InfluenzaA__AFN18442

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<212> RNA
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neuraminidase__InfluenzaA__AFN18452

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118834
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18462

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118835
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18472

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118836
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18482

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118837
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18492

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118838
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18514

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118839
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18520

<400> 118839

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc gucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118840

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18522

<400> 118840
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118841
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<212> RNA
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neuraminidase__InfluenzaA__AFN18524

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFN18530

<400> 118842
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118843
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFN18532

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118844
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<212> RNA
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neuraminidase__InfluenzaA__AFN18538

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118845
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18544

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118846
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18546

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118847
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18552

<400> 118847
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118848
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118849
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18560

<400> 118849

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118850
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFN18564

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN18566

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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<210> 118853
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<212> RNA
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neuraminidase__InfluenzaA__AFN18572

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AFN18582

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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neuraminidase__InfluenzaA__AFN18592

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
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<220>
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neuraminidase__InfluenzaA__AFN18618

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18624

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118862
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neuraminidase__InfluenzaA__AFN18646

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118863
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18656

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118864
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18666

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaucau cgacaaguga 1410

<210> 118865
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18676

<400> 118865
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118866
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18686

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ugggucaacc agaccuacgu caacaucucc uccaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118867
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18696

<400> 118867
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118868
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18706

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18716

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118870
<211> 1410
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neuraminidase__InfluenzaA__AFN18727

<400> 118870
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118871
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagaugg ucugggaccc caacggcugg 1140

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118872
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18743

<400> 118872
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 118873
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18749

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN18775

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucaacuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118892
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18835

<400> 118892
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaaggucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118893
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18841

<400> 118893

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118894

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18851

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aaccucaucc uccagaucgg caacaugauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118895
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18857

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118896
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18859

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118897
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18861

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118898
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18867

<400> 118898
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 118899
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18877

<400> 118899
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118900
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18887

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118911
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18975

<400> 118911
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118912
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN18981

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118913
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN18983

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118914
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18985

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118915
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN18987

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaucgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118916
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN18989

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118917
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFN18995

<400> 118917
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118918
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19001

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFN19007

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118921
<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFN19025

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<210> 118924
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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19049

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN19055

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN19065

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 118928
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neuraminidase__InfluenzaA__AFN19071

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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neuraminidase__InfluenzaA__AFN19077

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118930
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19083

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118931
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19089

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118932
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<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118933
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<212> RNA
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neuraminidase__InfluenzaA__AFN19105

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118934
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19114

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118935
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19126

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118936
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19136

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118937
<211> 1410

<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19146

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118938
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19156

<400> 118938
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118939
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neuraminidase__InfluenzaA__AFN19166

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118940
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19186

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118941
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19196

<400> 118941
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19205

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19215

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118944
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19225

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<220>
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neuraminidase__InfluenzaA__AFN19235

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN19245

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 118947
<211> 1410
<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19251

<400> 118947

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 118948

<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19261

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 118950
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

uccgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__AFN19307

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__AFN19317

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN19327

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

cucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<400> 118957

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118958
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118959
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19356

<400> 118959
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118960
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19358

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118961
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19360

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118962
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19362

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagcgcug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118963
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19364

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN19366

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFN19370

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19374

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN19376

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccuccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118970
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19382

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118971
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<212> RNA
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neuraminidase__InfluenzaA__AFN19384

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19386

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118973
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19390

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19392

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118976
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19394

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118977
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19396

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<400> 118978
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118979
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19400

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccuccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 118980
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19402

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118981
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19404

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118982
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19406

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19412

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19414

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19420

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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neuraminidase__InfluenzaA__AFN19426

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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neuraminidase__InfluenzaA__AFN19432

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__AFN19436

<400> 118995
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118996
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19438

<400> 118996
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau guccaucuga 1410

<210> 118997
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19442

<400> 118997
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaucaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcacaucuga 1410

<210> 118998
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19446

<400> 118998
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 118999
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19448

<400> 118999
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119000
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19458

<400> 119000
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119001
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19460

<400> 119001

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119002

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19462

<400> 119002
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119003
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19466

<400> 119003
augaacccca accagaagau caucaccauc ggcuccgucu cccucaccau cuccaccauc 60

ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucgccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119004
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19468

<400> 119004
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119005
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19470

<400> 119005
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119006
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19472

<400> 119006
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119007
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19476

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119008
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19478

<400> 119008
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119009
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19480

<400> 119009
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccgucggc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119010
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19482

<400> 119010
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccaagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119011
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19484

<400> 119011

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119012
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19488

<400> 119012
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119013
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19492

<400> 119013
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__AFN19494

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaugc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFN19496

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19500

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19504

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFN19506

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19508

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19510

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AFN19512

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119024
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119025
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19518

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119026
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19520

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119027
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19522

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119028
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19524

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucucccucau gcccaucuga 1410

<210> 119029
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19526

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaccg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119030
<211> 1410
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19528

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119031
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19530

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119032
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19532

<400> 119032
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19534

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119034
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<212> RNA

<213> Artificial Sequence

<220>
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<400> 119034
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119035
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19538

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119036
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19544

<400> 119036
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119037
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19546

<400> 119037
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119038
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19548

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119039
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19550

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19552

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19554

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19556

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119043
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19558

<400> 119043
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119044
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AFN19560

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg gcggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119045
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19562

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119046
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19564

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119047
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19566

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaac 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19568

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ucgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19570

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu accccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga acgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19572

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19574

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccaa caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug cuucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggcucc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119052
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19576

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gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19578

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119054
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19582

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>

<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19584

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119056

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<220>
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neuraminidase__InfluenzaA__AFN19588

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19590

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19592

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFN19594

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFN19596

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaccgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119061
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19600

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119062
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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119063
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19604

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119064
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19606

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119065
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19608

<400> 119065

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119066
<211> 1410
<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119067
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19612

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119068
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19614

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119069
<211> 1410
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<220>
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neuraminidase__InfluenzaA__AFN19618

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19620

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119071
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19624

<400> 119071
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119072
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19630

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119073
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19632

<400> 119073
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119074
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19634

<400> 119074
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccu ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119075
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19636

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaucaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119076
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<220>
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neuraminidase__InfluenzaA__AFN19638

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaucaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119077
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19642

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19644

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaucaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119080
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19646

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119081
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119082
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19650

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19652

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg aggucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119084
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19654

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagac cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119085
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19656

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19658

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AFN19660

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19662

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19664

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aacaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19666

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119091
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19668

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgagc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19670

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119093
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19673

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119094
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19675

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19677

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<210> 119096
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19683

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFN19685

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19687

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119099
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19689

<400> 119099
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119100
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19691

<400> 119100
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119101
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19693

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccuccaacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119102
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19697

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagacccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19699

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFN19701

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaugaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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uccgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AFN19703

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19711

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19721

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccau ggagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119108
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFN19731

<400> 119108
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcauggacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119109
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19737

<400> 119109

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119110

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19747

<400> 119110
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucacccacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcgccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119111
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19749

<400> 119111
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119112
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19759

<400> 119112
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119113
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19769

<400> 119113
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

cgcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119114
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19783

<400> 119114
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119115
<211> 1410
<212> RNA
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<220>
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119116
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19807

<400> 119116
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119117
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19809

<400> 119117
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aaccucaugc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccacc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaaguu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119118
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19815

<400> 119118
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaccaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaacuga 1410

<210> 119119
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19833

<400> 119119

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119120
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFN19851

<400> 119120
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcgccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119121
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19857

<400> 119121
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119122
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19867

<400> 119122
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagauc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaucaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119123
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19877

<400> 119123
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119124
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN19887

<400> 119124
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119125
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19897

<400> 119125
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccugc aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119126
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFN19907

<400> 119126
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN19917

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AFN19923

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ggcaaccagu cccagaucga gaccugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19933

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119131
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<220>
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neuraminidase__InfluenzaA__AFN19953

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ggcaaccagu cccagaucga gaccugcaac cagcgcguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN19967

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

uccaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN19973

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggcuccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN19979

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN19985

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AFN19995

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ggcaaccagu cccagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcgaccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN20020

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN20022

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN20041

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN20047

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFN20063

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFN20077

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFN20083

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaucuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN20100

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN20114

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFN20128

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccauccg cuccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN87935

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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neuraminidase__InfluenzaA__AFN87937

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AFN87940

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFN87942

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AFN87944

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119156
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFN87946

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaacuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucgucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaccuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacuccuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFN87950

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFN87952

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuucaa gaucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AFO64805

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119165
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64816

<400> 119165
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg ccaggacacc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

cgccgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccaa caacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acgccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaacuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaaguu ccucgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac ggcgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119166
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64827

<400> 119166
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcgaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcuu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119167
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64838

<400> 119167
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119168
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64849

<400> 119168
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acgccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119169
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64860

<400> 119169
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119170
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64871

<400> 119170
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugcgc caggacaucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119171
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64882

<400> 119171
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119172
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO64893

<400> 119172
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcuu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFO64904

<400> 119173

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ucccucaucc uccagaucgg caacaucauc uccauguggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

aucuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119174
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFO65019

<400> 119174

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccgcc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccgc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119175
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO65030

<400> 119175
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119176
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO65041

<400> 119176
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119177
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO65052

<400> 119177
augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gcaacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119178
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66139

<400> 119178
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccaacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119179
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66150

<400> 119179
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acuacaccgg caucugcaac cagcgcauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgcau ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccaugaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119180
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66161

<400> 119180
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaucugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119181
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66172

<400> 119181
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119182
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66183

<400> 119182
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119183
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66194

<400> 119183
augaacccca accagaagau caucaccauc ggcuccaucu ccaucgccau cggcaucauc 60

ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgcca acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacaucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc cccaaggaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119184
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66205

<400> 119184
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ugcuuccuca cccagaucgc cauccucguc accaccguca cccuccacuu caagcaguac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccucccu ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagcuc cgcuccggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaccaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119185
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFO66216

<400> 119185

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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119186
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66227

<400> 119186
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accgacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucgac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119187
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66238

<400> 119187
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119188
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFO66249

<400> 119188
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gccccccaacu uccacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acuccgacuu cuccgucaag caggacgucg ucgccaucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119189
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFP33330

<400> 119189
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccaggcc 120

ggcucccaga acuacaccgg caucugcaac cagaagauca ucaccuacga gaaccgcacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccauga cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg ccucggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcgcc gccuccuacc gcaucuucaa gaucgagaag 780

ggccgcguca ccaaguccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgagaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

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<220>
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neuraminidase__InfluenzaA__AFP33331

<400> 119190
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ucccucaugc uccagaucgg caacaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucaucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119191
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFQ32576

<400> 119191
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AFQ37282

<400> 119192
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccggcggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119193
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFQ55691

<400> 119193
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gcccuccuca ucggcgucgg caaccucguc uucaacaccg ucauccacga gaagaucggc 120

gaccaccaga ccgucaccca ccccaccacc accacccccg ccauccccaa cugcuccgac 180

accaucauca ccuacaacaa caccaucauc aacaacauca ccaccaccau caucaccgag 240

gccgagcgcc ccuucaaguc cccccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga caacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcau cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg cccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

aaggacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcgucguc 720

gccgucaccg acggccccgc cgccuccucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga ggacgucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacgucga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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cucggccgca ccgucuccac cuccggccgc uccggcuucg agaucaucaa ggucaccgag 1140

ggcuggauca acucccccaa ccacgccaag uccaucaccc agacccucau guccaacaac 1200

gacugguccg gcuacuccgg cuccuucauc aucaagacca aggacugcuu ccagcccugc 1260

uucuacgucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119194
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR68156

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119195
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFR68166

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119196
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR68176

<400> 119196
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgccuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau caaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119197
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR84677

<400> 119197
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119198
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR84687

<400> 119198
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaugggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119199
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84696

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119200
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84706

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119201
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84716

<400> 119201
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119202
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR84726

<400> 119202
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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neuraminidase__InfluenzaA__AFR84736

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119204
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFR84746

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119205
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFR84756

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119206
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84766

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119207
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84776

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119208
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84786

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119209
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neuraminidase__InfluenzaA__AFR84796

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119210
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84806

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84816

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFR84826

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119213
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84836

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucggcggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119214
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFR84846

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119215
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84856

<400> 119215
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119216
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84866

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuuccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119217
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AFR84876

<400> 119217

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccaug 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119218

<211> 1410
<212> RNA
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neuraminidase__InfluenzaA__AFR84895

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<210> 119220
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFR84915

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119221
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFR84925

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccuuc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119222
<211> 1353
<212> RNA
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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagaac 120

gagugcucca uccccuccuc caaccagguc guccccugcg agcccaucau cgucgagcgc 180

aacgucaccg aguaccgcga cugguccaag ccccagugcc agaucaccgg cuucgccccc 240

uucuccaagg acaacuccau ccgccucucc gccggcggcg acaucugggu cacccgcgag 300

cccuacgucu ccugcucccc cgacaagugc uaccaguucg cccucggcca gggcaccacc 360

cucgacaaca agcacuccaa cggcaccauc cacgaccgca ucccccaccg cacccuccuc 420

augaacgagc ucggcguccc cuuccaccuc ggcaccaagc aggucugcau cgccuggucc 480

uccuccuccu gccacgacgg ccgcgccugg cuccacgucu gcgucaccgg cgacgaccgc 540

aacgccaccg ccuccuucau cuacgacggc guccucgucg acuccaucgg cuccuggucc 600

cagaacaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcac cugcaccguc 660

gucaugaccg acggcuccgc cuccggccgc gccgacaccc gcauccucuu caucaaggag 720

ggcaagaucg uccacgucuc cccccucucc ggcuccgccc agcacaucga ggagugcucc 780

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ggccucgucg gcgacacccc ccgcaacgac gacuccuccu ccaacuccaa cugcaaggac 960

cccaacaacg agcgcggcaa ccccggcguc aagggcuggg ccuucgacua cggcaacgac 1020

gucuggaugg gccgcaccau cuccaaggac ucccgcuccg gcuacgagac cuuccgcguc 1080

aucggcggcu ggaccaucgc caacuccaag ucccagguca accgccaggu caucgucgac 1140

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cgcugcuucu acgucgagcu cauccgcggc cgcccccagg agacccgcgu cugguggacc 1260

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gacggcgcca acaucaacuu caugcccauc uga 1353

<210> 119223
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFV53208

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ugcuuccuca uccagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucauggacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119224
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFV53219

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ugcuuccuca ugcagaucgc cauccucgcc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau caaggagggc 780

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<210> 119225
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AFV53230

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccaag 240

gucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucuccau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 119226
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFV53241

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucauggacu ccaucggcuc cugguccccag 660

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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aacaacuggu ccggcuacuc cggcaucuuc uccgucgagg gcaagcgcug caucaaccgc 1260

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<210> 119227
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFV53252

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__AFV53263

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caaccgcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcaa ggucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accaacaccg acggcaacuu cuccgucaag caggacgucg ucgccaugac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgagg agaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119229
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFV53274

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<210> 119230
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AFV53285

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucauca acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gagugcgacu cccccgccuc caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccuc caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcgucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

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cccgucaucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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<220>
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neuraminidase__InfluenzaA__AFV53307

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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<220>
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aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagau cugccccgag 240

gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFV53328

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gucgucgagu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__AFV53339

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

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gucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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ggcgccaaca ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AFX96367

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFX96401

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu acuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
<213> Artificial Sequence

<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AFX96491

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgcccg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
<213> Artificial Sequence

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__AFX96551

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AFX96561

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFX96571

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AFX96581

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AFX96601

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFX96651

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AFX96671

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccauca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgucc gccucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugca ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgucc gccucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AFY24043

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AFY24153

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AFY24208

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacga caccguccac aaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacgagaac 600

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<220>

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgcccg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119297
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13019

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119298
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<212> RNA
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neuraminidase__InfluenzaA__AGB13029

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119299
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGB13039

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcgccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119300
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13051

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119301
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13069

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccugga ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119302
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGB13074

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13115

<400> 119303

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucguccu ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119304
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13133

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13152

<400> 119305
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119306
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13162

<400> 119306
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB13173

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaacuga 1410

<210> 119308
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13183

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccaggacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB13203

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGB13213

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119312
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13223

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13233

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119314
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGB13243

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagcgc 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119315
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13253

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119316
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13263

<400> 119316
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaccga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaag gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccgca ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacauca ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccgu cgacaaguga 1410

<210> 119317
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGB13273

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119318
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13283

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgccgcggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119319
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13293

<400> 119319
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119320
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGB13303

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119321
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB13313

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccgcca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaagggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119322
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13323

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119323
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13333

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccgcc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119324
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13343

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119325
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13353

<400> 119325
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugcuccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccuucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB13463

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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neuraminidase__InfluenzaA__AGB13473

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119337
<211> 1410

<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB13493

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGB13503

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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<220>
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neuraminidase__InfluenzaA__AGB13513

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB13523

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__AGB13533

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AGB13543

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB13553

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca accucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

ggcuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AGB13633

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

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aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AGB13643

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccgucaag caggacauca ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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<220>
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neuraminidase__InfluenzaA__AGB13653

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119357
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGB13734

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119358
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGB51359

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ucccuccucc uccagaucgg caacaucauc cuccucugga ugucccacuc cauccagacc 120

ggcgagaagu cccaccccaa ggucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agcucuucaa gauggagaag 780

ggcaagauca uccgcuccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcaa ggucgucugc gucugccgcg acaacuggca cgccuccaac 900

cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cuccaacgac ggcaagggca acugcggccc cguccucucc 1020

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cgcaccaagu ccaucuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug cauccgcccc 1260

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGB97270

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccaugg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGB97274

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119361
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neuraminidase__InfluenzaA__AGB97289

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119362
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGE15475

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucuccau cgacaaguga 1410

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neuraminidase__InfluenzaA__AGE15476

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119364
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neuraminidase__InfluenzaA__AGE15477

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<210> 119365
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<212> RNA
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neuraminidase__InfluenzaA__AGE15478

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119366
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<220>
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neuraminidase__InfluenzaA__AGE15479

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cucccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccau cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGE15480

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119368
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGE89270

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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

guccccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGE89280

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGE89290

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119371
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGE89301

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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<220>
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neuraminidase__InfluenzaA__AGE89311

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggaag 660

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uccuccaugu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac aucaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGE89364

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<220>
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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGE89385

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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neuraminidase__InfluenzaA__AGE89395

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AGE89425

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGE89722

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGG13558

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__AGG13570

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGG13582

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGG13606

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AGG13618

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<400> 119401

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119402

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neuraminidase__InfluenzaA__AGG13654

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc agaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccggccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119403
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGG13666

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGG13678

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucggcccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccgcc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGG13690

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119406
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGG13702

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc aacgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGG13714

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaagaacug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119408
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGG13726

<400> 119408
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119409
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<220>
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neuraminidase__InfluenzaA__AGG13738

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGG13750

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccac caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga ccgcugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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<212> RNA
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aacgucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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<210> 119422
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<212> RNA
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<220>
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

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<212> RNA
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<220>
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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau caaggaccac uccaucgucu cccgcuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

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cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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<220>
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ccuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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neuraminidase__InfluenzaA__AGJ73342

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaagugcaac caguccguca ucaccuacga gaacaacacc 180

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uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AGJ73350

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacgagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgucaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacuu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgacgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agauccuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacgagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg ucaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AGK63018

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neuraminidase__InfluenzaA__AGK63020

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AGK63022

<400> 119476
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcauggc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgaccucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119477
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63024

<400> 119477
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119478
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63026

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119479
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63028

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaagaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg ccaaguccug caucauccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119480
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63030

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119481
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63032

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucac cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119482
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63034

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagaaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119483
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63036

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119484
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGK63038

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagu ccaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119485
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGK63040

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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gccaccgccu ccuucaucua caacggcaag cucgucgacu ccgucgucuc cugguccaag 660

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagugc 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

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<212> RNA

<213> Artificial Sequence

<220>
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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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neuraminidase__InfluenzaA__AGK82159

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

uccaacgaga ccauccacga ccgcucccag uaccgcgccc ucaucuccug gccccucucc 480

ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

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cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

gacaaccccc gccccaacga ccccaacauc ggcaagugca acgaccccua ccccggcaac 1020

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

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neuraminidase__InfluenzaA__AGK84858

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

uccaacggca ccauccacga ccgcucccag uaccgcgccc ucaucuccug gccccucucc 480

ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucauc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

gacaaccccc gccccaacga ccccaacauc ggcaagugca acgaccccua ccccggcaac 1020

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

aucgaguacu uccucuga 1398

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

uccaacggca ccauccacga ccgcucccag uaccgcgccc ucaucuccug gccccucucc 480

ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucguc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

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neuraminidase__InfluenzaA__AGK84864

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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uccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca agucccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

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neuraminidase__InfluenzaA__AGL95090

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caacaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

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neuraminidase__InfluenzaA__AGL96802

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cuccccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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neuraminidase__InfluenzaA__AGL96807

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ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

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accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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ggcgagaaga accacuccga gaucugcaac cagaacacca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgacgg ccagggcguc 240

accuccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

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uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gagaaccaga accagcccga gaucugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgucgccga gcaggccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gagaaccaga accagcccga gaucugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgucgccga gcaggccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aagaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca aggucuucaa gaucgagaag 780

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gagaaccaga acaagcccga gaucugcaac cagaacguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacgucucc aacaccaacu ucgucgccga gcaggccguc 240

gccuccguca agcucgucgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caccuccugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aagaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca aggucuucaa gaucgagcgc 780

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<220>
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ggcucccaga accacaccgg caucugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagaagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuaca agaucuucaa gaucgagaag 780

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neuraminidase__InfluenzaA__AGO00280

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ggcaaccaga accacaccgg caccugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aaggagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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<220>

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacaccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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ggcgccgagc uccccuucac caucgacaag uga 1413

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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aacaacgagc gcggcaacca gggcgucaag ggcugggccu ucgacaacgg cgacgacguc 1080

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AGO00352

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

uccggccccg acaacggcgc cgucgccguc cucaaguaca acggcaucau caccgagacc 600

aucaaguccu ggcgcaagaa gauccuccgc acccaggagu ccgagugcgc cugcgucaac 660

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 119515
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<220>
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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

uccggccccg acaacggcgc cgucgccguc cucaaguaca acggcaucau caccgagacc 600

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 119516
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<212> RNA
<213> Artificial Sequence

<220>
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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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ggcgucugga ucggccgcac caagucccac uccucccgcc acggcuucga gaugaucugg 1080

gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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<220>
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neuraminidase__InfluenzaA__AGO00400

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 119518
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<220>
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neuraminidase__InfluenzaA__AGO00412

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cucccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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ggcgucugga ucggccgcac caagucccac uccucccgcc acggcuucga gaugaucugg 1080

gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcuccccuuc uccaucgaca aguga 1365

<210> 119519
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<220>
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neuraminidase__InfluenzaA__AGO00424

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

uccggccccg acaacggcgc cgucgccguc cucaaguaca acggcaucau caccgagacc 600

aucaaguccu ggcgcaagaa gauccuccgc acccaggagu ccgagugcgc cugcgucaac 660

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ggcgucugga ucggccgcac caagucccac uccucccgcc acggcuucga gaugaucugg 1080

gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcucccccuuc uccaucgaca aguga 1365

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<220>
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neuraminidase__InfluenzaA__AGO00436

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcucccccuuc uccaucgaca aguga 1365

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neuraminidase__InfluenzaA__AGO00448

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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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neuraminidase__InfluenzaA__AGQ47722

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ggcgagaagu cccaccccga gaucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gauggagaag 780

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cgcaccaagu ccaucuccuc ccgcuccggc uucgagaugg ucugggaccc caacggcugg 1140

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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ47731

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ggcucccaga accacaccgg cgucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu uccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcgagggcu ccugcaaccc cgucaccguc 1020

gacggcgccg acggcgucaa gggcuucucc uacaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

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ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119524

<211> 1377
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neuraminidase__InfluenzaA__AGQ47743

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ggcaaccaga accacaagaa cuccaccugg augaaccaga ccuacaucaa caucuccaac 180

accaacgucg ucgccggcca ggacuccacc uccgucaucc ucaccggcaa cuccucccuc 240

ugccccaucc gcggcugggc caucaacucc aaggacaacg gcauccgcau cggcuccaag 300

ggcgacgucu ucgucauccg cgagcccuuc aucuccugcu cccaccucga gugccgcacc 360

uucuuccuca cccagggcgc ccuccucaac gacaagcacu ccaacggcac cgucaaggac 420

cgcucccccu accgcgcccu cauguccugc cccgucggcg aggcccccuc ccccuacaac 480

ucccgcuucg aguccgucgc cugguccgcc uccgccugcc acgacggcau gggcuggcuc 540

accaucggca ucuccggccc cgacaacggc gccgucgccg uccucaagua caacggcauc 600

aucaccgaga ccaucaaguc cuggcgcaag aagauccucc gcacccagga guccgagugc 660

accugcguca acggcuccug cuucaccauc augaccgacg gccccuccaa cggccucgcc 720

uccuacaaga ucuucaagau cgagaagggc aaggucacca aguccaucga gcucaacgcc 780

cccaacuccc acuacgagga gugcuccugc uaccccgaca ccggcaaggu caugugcguc 840

ugccgcgaca acuggcacgg cuccaaccgc cccugggucu ccuucgacca gaaccucgac 900

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accggcuccu gcggccccgu cuccgccgac ggcgccaacg gcgucaaggg cuucuccuac 1020

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cucaccggcc ucgacugcau gcgccccugc uucugggucg agcucauccg cggccgcccc 1260

gaggaggaga ccaucuggac cuccggcucc aucaucuccu ucugcggcgu caacuccgac 1320

accgucgacu gguccuggcc cgacggcgcc gagcuccccu ucaccaucga caaguga 1377

<210> 119525
<211> 1413
<212> RNA
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ucccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cgccgcaucg ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccga gaaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaucaucaa guccuggcgc 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcccc gccuccuacc gcaucuucaa gaucaagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcaa ggucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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<210> 119526
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ47767

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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caccugcgac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aaggagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cggcggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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<210> 119527
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ47779

<400> 119527
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ucccucaucc uccagaucgg caacaucguc uccaucugga ucucccacuc cauccagacc 120

ggcaaccaga accacaccgg caccugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aaggagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cggcggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ugggcuacau cugcuccggc 960

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119528
<211> 1413
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ47791

<400> 119528
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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

ugggucaacc agacccacgu caacaucucc aacaccaacg ucgucgccgg caaggacacc 240

accuccauga uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccaucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuacc gcaucuucaa gaucgagaag 780

ggcaagauca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

ugcuaccccg acaccggcac cgucaugugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaacuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc ccccgcgaga agaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ucaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119529
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ47803

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ggcucccaga accacaccgg caucugcaac caguccauca ucaccuacaa gaacuccacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacg ucgucgccgg caagggcacc 240

accuccguca uccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugccccgucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccugcgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacgac 600

gaggccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggcgc 660

aagaagaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggcccc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucgac gcccccaacu cccacuacga ggagugcucc 840

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cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg ccccaaggac ggcaagggcu ccugcggccc cgucuacguc 1020

gacggcgcca acggcgucaa gggcuucucc uaccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccgacuccuc ccgccagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug caugcgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg acugguccug gcccgacggc 1380

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<210> 119530
<211> 1368
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ47814

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ucccucaucc uccagaucgg caacaucauc uccaucuggg ucucccacuc cauccagacc 120

ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacaacacc 180

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ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc aacggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc caucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

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gaccccaacg gcuggaccga caccgacggc aacuuccucg ucaagcagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgcccccg cgagaagacc 1260

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<210> 119531
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__AGQ47826

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggcgcc gccuccuacc gcaucuucaa gaucgagaag 780

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<210> 119532
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neuraminidase__InfluenzaA__AGQ47838

<400> 119532
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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc gagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGQ47850

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ggcuccucca ccugggucaa ccagaccuac gucaacaucu ccaacaccaa cgucgucgcc 180

ggccccgacg ccaccuccgu cauccucacc ggcaacuccu cccucugccc cauccgcggc 240

ugggccaucu acuccaagga caacggcauc cgcaucggcu ccaagggcga caucuucguc 300

auccgcgagc ccuucaucuc cugcucccac cucgagugcc gcgccuucuu ccucacccag 360

ggcgcccucc ucaacgacaa gcacuccaac ggcaccguca aggaccgcuc ccccuaccgc 420

gcccucaugu ccugccccgu cggcgaggcc cccucccccu acaacucccg cuucgagucc 480

gucgccuggu ccgccuccgc cugccacgac ggcaugggcu ggcucaccau cggcaucucc 540

ggccccgaca acggcgccgu cgccguccuc aaguacaacg gcaucaucac cgagaccauc 600

aaguccuggc gcaagaagau ccuccgcacc caggaguccg agugcgccug cgucaacggc 660

uccugcuuca ccaucaugac cgacggcccc uccgacggcc ccgccuccua caagaucuuc 720

aagaucgaga agggcaaggu caccaagucc aucgagcucg acgcccccaa cucccacuac 780

gaggagugcu ccugcuaccc cgacaccggc aaggucaugu gcgucugccg cgacaacugg 840

cacggcucca accgccccug ggucuccuuc gaccagaacc ucgacuacca gaucggcuac 900

aucugcuccg gcgucuucgg cgacuccccc cgccccaagg acggcaccgg cuccugcggc 960

cccgucuccg ucgacggcgc caacggcguc aagggcuucu ccuaccgcua cggcaacggc 1020

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cccaacggcu ggaccgagac cgacucccgc uucuccgucc gccaggacgu cgucgccaug 1140

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<213> Artificial Sequence

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neuraminidase__InfluenzaA__AGQ47873

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ggcgagaagu cccaccccaa ggucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agcucuucaa gauggagaag 780

ggcaagauca ucaaguccau cgagcucgac gccccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcaa ggucgucugc gucugccgcg acaacuggca cgccuccaac 900

cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cuccaacgac ggcaagggca acugcggccc cguccucucc 1020

aacggcgcca acggcgucaa gggcuucucc uuccgcuacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

accgagaccg acuccuccuu cuccaugaag caggacauca ucgcccucac cgacuggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug cauccgcccc 1260

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<212> RNA
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<220>

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ggcgagaagu cccaccccaa ggucugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaaca ucgccgccgg ccagggcguc 240

acccccauca uccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgaca ucuucgucau gcgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgaccgcc acuccaacgg caccgucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaagaucc uccgcaccca ggaguccgag ugcgucugca ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacggccag gccuccuaca agcucuucaa gauggagaag 780

ggcaagauca uccgcuccau cgagcucgac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acaccggcaa ggucgucugc gucugccgcg acaacuggca cgccuccaac 900

cgccccuggg ucuccuucga ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

gucuucggcg acaacccccg cuccaacgac ggcaagggca acugcggccc cguccucucc 1020

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cgcaccaagu ccaucuccuc ccgcuccggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gcaugaacug cauccgcccc 1260

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<220>
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neuraminidase__InfluenzaA__AGQ47897

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gagugcgacu cccccgccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgucgagu accgcaacug guccaagccc cagugcaaga ucaccggcuu cgcccccuuc 300

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gacaacaagc acuccaacga caccauccac gaccgcaccc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccgucgucg acaucaacgu caaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucuc cgaggacucc cgcuccggcu acgagaccuu caaggucauc 1140

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<220>
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neuraminidase__InfluenzaA__AGQ47909

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacga caccauccac gaccgcaucc cccaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua cgacggccgc cucgucgacu ccaucggcuc cugguccccag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau cgaggagggc 780

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119538
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<220>
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neuraminidase__InfluenzaA__AGQ47921

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uacgucuccu gcgaccacgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccgucgucg acaucaacau ggaggacuac uccaucgacu ccuccuacgu cugcuccggc 960

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gacaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggagg cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGQ47933

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ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

ggcugggcca ucuacuccaa ggacaacucc auccgcaucg gcuccaaggg cgacgucuuc 300

gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga ccgccacucc aacggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

uccgucgccu gguccgccuc cgccugccac gacggcaugg gcuggcucac caucggcauc 540

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

gacugcaucc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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uccuggcccg acggcgccga gcucccccuuc accaucgaca aguga 1365

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<220>
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neuraminidase__InfluenzaA__AGQ47945

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

ugggucaagg acaccaccuc cgucauccuc accggcaacu ccucccucug ccccauccgc 240

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc uccggcaccg ucaaggaccg cuccccccuac 420

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gaccccaacg gcuggaccga gaccgacucc aaguucuccg uccgccagga cgucgucgcc 1140

augaccgacu gguccggcua cuccggcucc uucguccagc accccgagcu caccggccuc 1200

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neuraminidase__InfluenzaA__AGQ47969

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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ggcucccaga accacaccgg caucugcaac cagaacauca ucaccuacaa gaacuccacc 180

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

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cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu uccucaccga gcaggccguc 240

accuccgucg cccucgccgg caacuccucc cucugcccca ucuccggcug ggccaucuac 300

uccaaggaca acggcauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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neuraminidase__InfluenzaA__AGQ81718

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gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aaccucaccg agaucgucca ccucaacucc accauccucg agaaggagau cugccccaag 240

gccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucucc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

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cccguccucu acaucaacau ggccgacuac uccaucgacu ccggcuacgu cugcuccggc 960

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gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

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cccguccucu acaucaacau ggccgacuac uccaucgacu ccggcuacgu cugcuccggc 960

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gagugcacca acuccuccaa caaccaggcc guccccugcg gccccaucau caucgagcgc 180

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gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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gagugcauca acuccuccaa caaccagucc gucccugcg gccccaucau caucgagcgc 180

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcauc cucgucgacu ccaucggcuc cugguccaag 660

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cccguccucu acaucaacau gaccgacuac uccaucgacu ccggcuacgu cugcuccggc 960

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau ggccaucuga 1410

<210> 119562
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neuraminidase__InfluenzaA__AGQ81732

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ugccuccuca ugcaggucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcauc cucgucgacu ccaucggcuc cugguccaag 660

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcucca acuccuccaa cucccaggcc guccccugcg gccccaucau caucgagcgc 180

aacgucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccgagu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

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<210> 119564
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81734

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gaguacucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81735

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcucca acuccuccaa cucccaggcc guccccugcg gccccaucau caucgagcgc 180

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<210> 119566
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ81736

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<210> 119567
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81737

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

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<220>
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neuraminidase__InfluenzaA__AGQ81738

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gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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<210> 119569
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neuraminidase__InfluenzaA__AGQ81739

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neuraminidase__InfluenzaA__AGQ81740

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uggaugggcc gcaccaucga gaaggaccuc cgcuccggcu acgagaccuu ccgcgucauc 1140

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AGQ81741

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg acaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcaug cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac accuccuccu ccuccaacug caaggacccc 1020

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119572
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81742

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccgagu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcaug cucgucgacu ccaucggcuc cugguccaag 660

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cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 119573
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81744

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu ccgccacgac 120

gagugcacca acuccuccaa caaccaggcc guccccugcg gccccaucau caucgagcgc 180

aacgucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccgagu accgcgacug guccaagccc cagugccaga ucaccggcuu cgucccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

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gacaaccccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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<210> 119574
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81746

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcucca acuccuccaa cucccaggcc guccccugcg gccccaucau caucgagcgc 180

aacgucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccgagu accgcggcug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

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gccaccgccu ccaucaucua cgacggcauc cucgucgacu ccaucggcuc cugguccaag 660

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uacccccagu accccgaggu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119575
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81747

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc guccccugcg gccccaucau caucgagcgc 180

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gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

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aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacacccgca uccucuucau ccgcgagggc 780

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cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119576
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81749

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugcuccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgccgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg ccgcaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgccuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119577
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81750

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugcuccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgccgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

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aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgccuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81751

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccucuacuu caagcacaac 120

gagugcucca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119579
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<220>
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neuraminidase__InfluenzaA__AGQ81753

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg gcaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacaucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcaug cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacacccgca uccucuucau ccgcgagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccagu accccgaggu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac accuccuccu ccuccaacug caaggacccc 1020

aacaacgagc gcggcgcccc cggcgucaag ggcugggccu ucgacuccgg caacgacauc 1080

uggaugggcc gcaccaucga gaaggaccuc cgcuccggcu acgagaccuu ccgcgucauc 1140

ggcggcugga acaccgccaa cuccaagucc cagaccaacc gccaggucau cgucgacucc 1200

gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc cccaaggaga cccgcgucug guggaccucc 1320

aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119581
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81756

<400> 119581
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ugccuccuca uccagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacgucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggccuc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacacccgca uccucuucau ccgcgagggc 780

aagaucaucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccagu accccgaggu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac accuccuccu ccuccaacug caaggacccc 1020

aacaacgagc gcggcgcccc cggcgucaag ggcugggccu ucgacuccgg caacgacauc 1080

uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

ggcggcugga acaccgccaa cuccaagucc cagaccuccc gccaggucau cgucgacucc 1200

gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119582
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AGQ81757

<400> 119582
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ugccuccuca uccagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc guccccugcg gccccaucau caucgagcgc 180

aacgucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggccuc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacacccgca uccucuucau ccgcgagggc 780

aagaucaucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccagu accccgaggu ccgcugcguc ugccgcgaca acuggcgcgg cuccaaccgc 900

cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac accuccuccu ccuccaacug caaggacccc 1020

aacaacgagc gcggcgcccc cggcgucaag ggcugggccu ucgacuccgg caacgacauc 1080

uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

ggcggcugga acaccgccaa cuccaagucc cagaccuccc gccaggucau cgucgacucc 1200

gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc cccaaggaga cccgcgucug guggaccucc 1320

aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119583
<211> 1401

<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81758

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaccau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacgagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca agaacgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

accauggcca acuccaaguc ccagaucaac cgccagguca ucgucgacuc cgacaacugg 1200

uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119584
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81759

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ugcuuccuca uccagaucgc cauccucacc accaccauga cccuccacuu ccgccagucc 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaucauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucau caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119585
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81760

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

aucaccgcca acuccaaguc ccagaucaac cgccagguca ucgucgacuc cgacuccugg 1200

uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119586
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81761

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca ucaaggaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

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neuraminidase__InfluenzaA__AGQ81763

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

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<220>
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neuraminidase__InfluenzaA__AGQ81766

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuucucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119589
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81767

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuucucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

uccgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcga ggccuggcuc cacaucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cgacggcaug cucgucgacu ccaucggcuc cugguccaag 660

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugccuccuca ugcagaucgc cauccucguc accaccauga cccuccacuu caagcacggc 120

gagugcacca acuccuccaa caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc uccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaaccgcc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

uccgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcga ggccuggcuc cacaucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cggcggcaug cucgucgacu ccaucggcuc cugguccaag 660

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cccguccucu acaucaacau ggccgacuac uccgucgacu ccggcuacgu cugcuccggc 960

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119592
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81770

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ugcuucauca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ccugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<210> 119593
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<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ81772

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ggcugcacca acuccuccga caaccaggcc guccccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagac cugccccaag 240

uccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccguccucu ucaucaacau ggccgacuac uccaucgacu ccuccuacgu cugccccggc 960

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<210> 119594

<211> 1401
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81773

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gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aagaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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<220>
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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

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gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

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aucaacuuca ugcccaucug a 1401

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ggcugcacca acuccuccga caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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neuraminidase__InfluenzaA__AGQ81778

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ggcugcacca acuccuccga caaccaggcc gucccugcg gccccaucau caucgagcgc 180

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uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGQ81779

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ugccuccucc uccagaucgc ccucuucgcc accaccauga cccuccacuu caagcagacc 120

ggcugcacca acuccuccga caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagac cugccccaag 240

uccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucgccgcc gccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccacccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccaucaucua cgacggcauc cucgucgacu ccaucgccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccgagau ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccguccucu ucaucaacau ggccgacuac uccaucgacu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac cgcuccuccu ccuccaacug ccgcgacccc 1020

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uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 119600
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81780

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ugccuccucc uccagaucgc ccucuucgcc accaccauga cccuccacuu caagcagacc 120

ggcugcacca acuccuccga caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagac cugccccaag 240

uccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucgccgcc gccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccacccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucgcc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccaucaucua cgacggcauc cucgucgacu ccaucgccuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggccgcgcc gacacccgca uccucuucau ccgcgagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccgaggu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccguccucu ucaucaacau ggccgacuac uccaucgacu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac cgcuccuccu ccuccaacug ccgcgacccc 1020

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uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

uccggcuggu ccaccgccaa cuccaagucc cagaucaacc gccaggucau cgucgaccgc 1200

gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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ggcgccaaca ucaaccucau gcccaucuga 1410

<210> 119601
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81781

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ugcuuccuca ugcagaucgc cauccucacc accaccauga ccccccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

cgcggcgccc ccggcgucaa gggcugggcc uucgacgacg gcaacgacau cuggaugggc 1080

cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccgac 1380

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<210> 119602
<211> 1410
<212> RNA
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<220>
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ugccuccucc uccagaucgc ccucuucgcc accaccauga cccuccacuu caagcagacc 120

ggcugcacca acuccuccga caaccaggcc gucccugcg gccccaucau caucgagcgc 180

aacaucaccg agaucgucca ccucaacucc accacccucg agaaggagac cugccccaag 240

uccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucgccgcc gccggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacaagc acuccaacgg caccacccac gaccgcaccc cccaccgcac ccuccucaug 480

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aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccgaggu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccguccucu ucaucaacau ggccgacuac uccaucgacu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caacgacgac cgcuccuccu ccuccaacug ccgcgacccc 1020

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uggaugggcc gcaccaucga gaaggacucc cgcuccggcu acgagaccuu ccgcgucauc 1140

uccggcuggu ccaccgccaa cuccaagucc cagaucaacc gccaggucau cgucgaccgc 1200

gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc cccaaggaga accgcgucug guggaccucc 1320

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<210> 119603
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81784

<400> 119603

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu ccgcaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcaacgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca aguccgacuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccgac 1380

aucaacuuca ugcccaucug a 1401

<210> 119604
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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ugcuucauca ugcagaucgc cauccucacc accaccauga ccccccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

cacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccgac 1380

aucaaccuca ugcccaucug a 1401

<210> 119605
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<220>
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neuraminidase__InfluenzaA__AGQ81787

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119606
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<220>
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neuraminidase__InfluenzaA__AGQ81789

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ugccuccuca ugcagaucgc cauccucacc accaccauga ccccccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc guccccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcauc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcgacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccgac 1380

aucaaccuca ugcccaucug a 1401

<210> 119607
<211> 1401
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81790

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccaggcc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucaccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggccgcgc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg caacgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

gucgagcuca uccgcggccg cccccaggag ccccgcgucu gguggaccuc caacuccauc 1320

aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119608
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81792

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccuca acaagugcua ccaguucgcc cucggccagg gcaccacccu cgagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaugg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccgucaucu acgacggcau gcucgucgac uccaucggcu ccugguccca gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca agaacggcuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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neuraminidase__InfluenzaA__AGQ81793

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccuca acaagugcua ccaguucgcc cucggccagg gcaccacccu cgagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaugg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccgucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccuca acaagugcua ccaguucgcc cucggccagg gcaccacccu cgagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaugg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccgucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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<210> 119611
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neuraminidase__InfluenzaA__AGQ81795

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gagugcaaca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

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cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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neuraminidase__InfluenzaA__AGQ81801

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cuccggcgac aucuggguca cccgcgagcc cuacgucucc 360

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cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

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uccaucaucu acaacggcau gcucgucgac uccaucggcu ccuggucccaa gaacauccuc 660

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ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg cgagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccauca agaacggcuc ccgcuccggc uacgagaccu uccgcgucgu caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119618
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81803

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ugccuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu ccgccagaac 120

gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cuccggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacgag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119619
<211> 1410
<212> RNA
<213> Artificial Sequence

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neuraminidase__InfluenzaA__AGQ81804

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ugccuccuca ugcagaccgc cauccucguc accaccauga cccuccacuu caagcacaac 120

gagugcacca acuccuccaa caaccaggcc gcccccugcg gccccaucau caucgagcgc 180

aacgucaccg aggucgucca ccucaacucc accacccucg agaaggagau cugccccaag 240

gccgccggcu accgcaacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccucgg caagugcuac caguucgccc ucggccaggg caccacccuc 420

gacaacuccc acuccaacgg caccucccac gaccgcaccc cccaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucaug accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgaccgcaac 600

gccaccgccu ccaucaucua cggcggcauc cucgucgacu ccaucggcuc cugguccaag 660

aacauccucc gcacccagga guccgagugc gucugcauca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacacccgca uccucuucau ccgcgagggc 780

aagaucgucc acaucucccc ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccguccucu acaucaacau ggccgacuac uccaucgacu ccggcuacgu cugcuccggc 960

cucgucggcg acacccccg caacgacgac gucuccuccu ccuccaacug caaggacccc 1020

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gacaacuccu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccauca ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccaaca ucaacuucau gcccaucuga 1410

<210> 119620
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81805

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg acaagugcua ccaguucgcc cucggccagg gcaccaccau gaagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcggccc caacaacgag 1020

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119621
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81807

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gagugccgca accccuccaa caaccagguc augcccugcg agcccgucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cuccggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccuca acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc guccucuuca ucaaggaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccauccuc 900

uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119622
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81808

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu caagcagaac 120

gagugcucca accccuccaa caaccagguc gucccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaac 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

aucaacuuca ugcccaucug a 1401

<210> 119623
<211> 1401
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81809

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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccccg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcgaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggucgacua cuccaucggc ucccgcuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccaccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaagu gcaucaaccg cugcuucuac 1260

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aucaacuuca ugcccaucug a 1401

<210> 119624
<211> 1401
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<220>
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neuraminidase__InfluenzaA__AGQ81810

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gagugcucca accccuccaa caaccagguc gucccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaac 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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neuraminidase__InfluenzaA__AGQ81811

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucguc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuucucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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<210> 119626
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<212> RNA

<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81812

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gagugcucca uccccuccaa caaccagguc guccccugcg agcccaucau cgucgagcgc 180

aacaucaccg agaucgucua ccucaacaac accaccaucg agaaggagcu cugccccaag 240

cucaccgagu accgcgacug guccaagccc cagugccaga ucaccggcuu cgcccccuuc 300

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ugcuucuacg ucgagcucau ccgcggccgc ccccaggaga cccgcgucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaac 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccaucc gcaacgacuc ccgcuccggc uacgagaccu uccgcgucau caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<210> 119629
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<212> RNA
<213> Artificial Sequence

<220>
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ggcugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<210> 119630
<211> 1401
<212> RNA
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<220>
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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cgcaccaucc gcaacgacuc ccgcuccggc uacgagaccu uccgcgucau caacggcugg 1140

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<210> 119631
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<212> RNA
<213> Artificial Sequence

<220>
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<212> RNA
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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gagugcucca accccuccaa caaccagguc gucccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

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gagugcucca accccuccaa caaccagguc gucccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaagaagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

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cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

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ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

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cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

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<210> 119637
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<212> RNA
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neuraminidase__InfluenzaA__AGQ81825

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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<212> RNA
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucguc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuucucc uccuccaacu gccgcgaccc caacaacgag 1020

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<212> RNA
<213> Artificial Sequence

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

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aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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<212> RNA
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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neuraminidase__InfluenzaA__AGQ81839

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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uccggcuacu ccggcaucuu cuccgucgag ggcaagaacu gcaucaaccg cugcuucuac 1260

gucgagcuca uccgcggccg cccccaggag ccccgcgucu gguggaccuc caacuccauc 1320

aucgucuucu gcggcaccuc cggcaccuac ggcaccggcu ccuggcccga cggcgccaac 1380

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neuraminidase__InfluenzaA__AGQ81840

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

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aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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neuraminidase__InfluenzaA__AGQ81841

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gagugcucca accccuccaa caaccagguc gucccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

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guccaccaga ccgucgucua ccccaccauc acccccccg ucauccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccau caucaacaag 240

gccgagaagc aguucaagcc cucccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccuccucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga ggacaucccc aagaccaaga uccagcaccu cgaggagugc 840

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cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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guccaccaga ccgucaucua ccccaccauc accucccccg ucgucccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

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ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

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uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acaccccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

aacaucaacg gcggccccgg cgucaagggc uucggcuucc gcaccggcaa cgacgucugg 1080

cucggccgca ccgucuccac caccggccgc uccggcuucg aggucaucaa ggucaccgag 1140

ggcuggauca acucccucaa ccacgccaag uccgucaccc agacccucgu cuccaacucc 1200

gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

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<220>
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neuraminidase__InfluenzaA__AGQ81846

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaucua ccccaccauc accucccccg ucgucccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acaccccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119647
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<212> RNA
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<220>

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guccaccaga ccgucaucua ccccaccauc accucccccg ucgucccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acaccccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119648

<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81848

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaucua ccccaccauc accucccccg ucgucccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcau cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acaccccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81850

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaucua ccccaccauc accucccccg ucgucccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccaccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81852

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaccua ccccaccauc accucccccg ucgucccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccaccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacauccccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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cucggccgca ccgucuccac caccggccgc uccggcuucg aggucaucaa ggucaccgag 1140

ggcuggauca acucccucaa ccacgccaag uccgucaccc agacccucgu cuccaacucc 1200

gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aaccgcaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

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neuraminidase__InfluenzaA__AGQ81853

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaccua ccccaccauc accucccccg ucgucccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccaccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacauccccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

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ggcuccaaca ucggcuucau gcccaaguga 1410

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaccua ccccaccauc accucccccg ucgucccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccaccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacauccccc aagaccaaga uccagcaccu cgaggagugc 840

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cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucaccua ccccaccauc accucccccg ucgucccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccgu caucaacaag 240

gccgagaagc acuucaagcc cucccucccc cucugccccu ucaagggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

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ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccaccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

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cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

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ggcuccaaca ucggcuucau gcccaaguga 1410

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neuraminidase__InfluenzaA__AGQ81856

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guccaccaga ccgucgucua ccccaccauc acccccccg ucauccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccau caucaacaag 240

gccgagaagc aguucaagcc cucccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccuccucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga ggacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

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ggcuggauca acucccucaa ccacgccaag uccgucaccc agacccucgu cuccaacaac 1200

gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aaccgcaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119655
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81857

<400> 119655
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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucgucua ccccaccauc acccccccg ucauccccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccau caucaacaag 240

gccgagaagc aguucaagcc cucccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc cgccuccucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga ggacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaccga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

aacaucaacg gcggccccgg cgucaagggc uucggcuucc gcgccggcaa cgacgucugg 1080

cucggccgca ccgucuccac caccggccgc uccggcuucg aggucaucaa ggucaccgag 1140

ggcuggauca acucccucaa ccacgccaag uccgucaccc agacccucgu cuccaacaac 1200

gacugguccg gcuacuccgg cuccuucauc gucgagucca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aaccgcaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119656
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81858

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gcccuccuca ucggcgucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

gaccaccaga ucgucgucua ccccaccacc accgccuccg ucgucccaa cugcuccgac 180

accaucauca ccuacaacaa caccgucguc aacaacauca ccaccaccau caucaccaag 240

gaggagaccc acuucaaguc cucccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacgucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau guacgccggc aagaugaccg acuccaucaa guccuggcgc 660

aaggacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccgucaccg acggccccgc caccaacucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaucga cgucuacugc gucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

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gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

uucuacaucg agcucauccg cggccgcccc aacaagaacg acgacgucuc cuggaccucc 1320

aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119657
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81859

<400> 119657

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gcccuccuca ucggcaucgg caaccucauc uucaacaccg ucauccacga gaagaucggc 120

guccaccaga ccgucgucug ccccaccauc acccccccg ucgucccaa cugcuccgac 180

accaccauca ccuacaacaa caccgucguc aacaacauca ccaccaccau caucaacaag 240

gccgagaagc aguucaaguc cucccucccc cucugccccu uccgcggcuu cuuccccuuc 300

cacaaggaca acgccauccg ccucggcgag aacaaggacg ucaucgucac ccgcgagccc 360

uacgucuccu gcgacaacga cgacugcugg uccuucgccc ucgcccaggg cgcccuccuc 420

ggcaccaagc acuccaacgg caccaucaag gaccgcaccc ccuaccgcuc ccucauccgc 480

uuccccaucg gcaccgcccc cguccucggc aacuacaagg agaucugcgu cgccuggucc 540

uccuccuccu gcuucgacgg caaggagugg augcacaucu gcaugaccgg caacgacaac 600

gacgccuccg gccagaucau cuacgccggc aagaugaccg acuccaucaa guccuggcgc 660

cgcgacaucc uccgcaccca ggaguccgag ugccagugca ucgacggcac cugcaucguc 720

gccaucaccg acggccccgc cgccuccucc gccgaccacc gcaucuacug gauccgcgag 780

ggcaagauca ucaaguacga gaacaucccc aagaccaaga uccagcaccu cgaggagugc 840

uccugcuacg ucgacaucga cgucuacugc aucugccgcg acaacuggaa gggcuccaac 900

cgccccugga ugcgcaucaa caacgagacc auccucgaga ccggcuacgu cugcuccaag 960

uuccacuccg acacccccg ccccgccgac cccuccaccg ucuccugcga cuccccccucc 1020

aacaucaacg gcggccccgg cgucaagggc uucggcuucc gcgccggcaa cgacgucugg 1080

cucggccgca ccgucuccac caccggccgc uccggcuucg aggucaucaa ggucaccgag 1140

ggcuggauca acucccucaa ccacgccaag uccgucaccc agacccucgu cuccaacucc 1200

gacugguccg gcuacuccgg cuccuucauc gucgagaaca acggcugcuu ccagcccugc 1260

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aacuccaucg ucaccuucug cggccucgac aacgagcccg gcuccggcaa cuggcccgac 1380

ggcuccaaca ucggcuucau gcccaaguga 1410

<210> 119658
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ81860

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ucccuccuca ucggcaucgc caaccucggc cucaacaucg gccuccacua caaggucggc 120

gacacccccg acgucuccau ccccaacaug aacgagacca acuccaccac caccaucauc 180

aacaacaaca cccagaacaa cuucaccaac aucaccaaca ucaucgucaa caagaacgag 240

gagaagaccu uccucaaccu caccaagccc cucugcgagg ucaacuccug gcacauccuc 300

uccaaggaca acgccauccg caucggcgag gacgcccaca uccucgucac ccgcgagccc 360

uaccucuccu gcgacccccа gggcugccgc auguucgccc ucucccaggg caccacccuc 420

cgcggccgcc acgccaacgg caccauccac gaccgcuccc ccuuccgcgc ccucgucucc 480

ugggagaugg gccaggcccc cuccccccuac aacgucaagg ucgagugcgu cggcuggucc 540

uccaccuccu gccacgacgg caucucccgc auguccaucu gcauguccgg ccccaacaac 600

aacgccuccg ccgucgucug guacggcggc cgccccguca ccgagauccc cuccugggcc 660

ggcaacaucc uccgcaccca ggaguccgag ugcgucugcc acaagggcau cugccccguc 720

gucaugaccg acggccccgc caacaaccgc gccgccacca agaucaucua cuucaaggag 780

ggcaagaucc agaagaucga ggagcucgcc ggcuccgccc agcacaucga ggagugcucc 840

ugcuacggcg ccgucgaggu caucaagugc aucugccgcg acaacuggaa gggcgccaac 900

cgccccguca ucaccaucaa ccccgagaug augacccaca ccuccaagua ccucugcucc 960

aagguccuca ccgacaccuc ccgccccaac gaccccacca acggcaacug cgacgccccc 1020

aucaccggcg gcuccccccga ccccggcguc aagggcuucg ccuuccucga cggcgagaac 1080

uccuggcucg gccgcaccau cuccaaggac ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccg agaccgacac ccaguccggc cccaccuccc accaggucau cgucaacaac 1200

cagaacuggu ccggcuacuc cggcgccuuc aucgacuacu gggccaacaa ggagugcuuc 1260

aaccccugcu ucuacgucga gcucauccgc ggccgcccca aggaguccuc cguccucugg 1320

accuccaacu ccaucgucgc ccucugcggc uccaaggagc gccucggcuc cugguccugg 1380

cacgacggcg ccgagaucau cuacuucaag uga 1413

<210> 119659
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81861

<400> 119659
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ucccuccuca ucggcaucgc caaccucggc cucaacaucg gccuccacua caaggucggc 120

gacacccccg acgucuccau ccccaacaug aacgagacca acuccaccac caccaucauc 180

aacaacaaca cccagaacaa cuucaccaac accaccaaca ucaucgucaa caagaacgag 240

gagaagaccu uccucaaccu caccaagccc cucugcgagg ucaacuccug gcacauccuc 300

uccaaggaca acgccauccg caucggcgag gacgcccaca uccucgucac ccgcgagccc 360

uaccucuccu gcgacccccca gggcugccgc auguucgccc ucucccaggg caccacccuc 420

cgcggccgcc acgccaacgg caccauccac gaccgcuccc ccuuccgcgc ccucgucucc 480

ugggagaugg gccaggcccc cuccccccuac aacgucaagg ucgagugcgu cggcuggucc 540

uccaccuccu gccacgacgg caucucccgc auguccaucu gcauguccgg ccccaacaac 600

aacgccuccg ccgucgucug guacggcggc cgccccguca ccgagauccc cuccugggcc 660

ggcaacaucc uccgcaccca ggaguccgag ugcgucugcc acaagggcau cugccccguc 720

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ggcaagaucc agaagaucga ggagcucgcc ggcuccgccc agcacaucga ggagugcucc 840

ugcuacggcg ccgucgaggu caucaagugc aucugccgcg acaacuggaa gggcgccaac 900

cgccccguca ucaccaucaa ccccgagaug augacccaca ccuccaagua ccucugcucc 960

aagguccuca ccgacaccuc ccgccccaac gaccccacca acggcaacug cgacgccccc 1020

aucaccggcg gcucccccga ccccggcguc aagggcuucg ccuuccucga cggcgagaac 1080

uccuggcucg gccgcaccau cuccaaggac ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccg agaccgacac ccaguccggc cccaccuccc accaggucau cgucaacaac 1200

cagaacuggu ccggcuacuc cggcgccuuc aucgacuacu gggccaacaa ggagugcuuc 1260

aaccccugcu ucuacgucga gcucauccgc ggccgcccca aggaguccuc cguccucugg 1320

accuccaacu ccaucgucgc ccucugcggc uccaaggagc gccucggcuc cugguccugg 1380

cacgacggcg ccgagaucau cuacuucaag uga 1413

<210> 119660
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81862

<400> 119660
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ucccuccuca ucggcaucgc caaccucggc cucaacaucg gccuccacua caaggucggc 120

gacacccccg acgucaacau ccccuccaug aacgagacca acuccaccac caccaucauc 180

aacaacaaca cccagaacaa cuucaccaac aucaccaaca ucaucgucaa caaggaggag 240

ggccgcaccu uccucaaccu caccaagccc cucugcgagg ucaacuccug gcacauccuc 300

uccaaggaca acgccauccg caucggcgag gacgcccaca uccucgucac ccgcgagccc 360

uaccucuccu gcgacccccа gggcugccgc auguucgccc ucucccaggg caccacccuc 420

cgcggccgcc acgccaacgg caccauccac gaccgcuccc ccuuccgcgc ccucgucucc 480

ugggagaugg gccaggcccc cuccccccuac aacguccgcg ucgagugcau cggcuggucc 540

uccaccuccu gccacgacgg caucucccgc auguccaucu gcauguccgg ccccaacaac 600

aacgccuccg ccgucgucug guacggcggc cgccccguca ccgagauccc cuccugggcc 660

ggcaacaucc uccgcaccca ggaguccgag ugcgucugcc acaagggcau cugccccguc 720

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ggcaagaucc agaagaucga ggagcucgag ggcaacgccc agcacaucga ggagugcucc 840

ugcuacggcg ccgccggcgu caucaagugc aucugccgcg acaacuggaa gggcgccaac 900

cgccccguca ucaucaucga ccccgagaug augacccaca ccuccaagua ccucugcucc 960

cgcguccuca ccgacaccuc ccgccccaac gaccccaccu ccggcaacug cgacgccccc 1020

aucaccggcg gcucccccga ccccggcguc aagggcuucg ccuuccucga cggcgagaac 1080

uccuggcucg gccgcaccau cuccaaggac ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccg agaccgacac ccaguccggc cccaccuccc accaggucau cgucaacaac 1200

cagaacuggu ccggcuacuc cggcgccuuc aucgacuacu gggccaacaa ggagugcuuc 1260

aaccccugcu ucuacgucga gcucauccgc ggccgcccca aggaguccuc cguccucugg 1320

accuccaacu ccaucgucgc ccucugcggc uccaaggagc gccucggcuc cugguccugg 1380

cacgacggcg ccgagaucau cuacuucaag uga 1413

<210> 119661
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81863

<400> 119661
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ucccuccuca ucggcaucgc caaccucggc cucaacaucg gccuccacua caaggucggc 120

gacacccccg acgucaacau ccccuccaug aacgagacca acuccaccac caccaucauc 180

aacaacaaca cccagaacaa cuucaccaac aucaccaaca ucaucgucaa caaggaggag 240

gagcgcaccu uccucaaccu caccaagccc cucugcgagg ucaacuccug gcacauccuc 300

uccaaggaca acgccauccg caucggcgag gacgcccaca uccucgucac ccgcgagccc 360

uaccucuccu gcgaccccca gggcugccgc auguucgccc ucucccaggg caccacccuc 420

cgcggccgcc acgccaacgg caccauccac gaccgcuccc ccuuccgcgc ccucgucucc 480

ugggagaugg gccaggcccc cuccccccuac aacguccgcg ucgagugcau cggcuggucc 540

uccaccuccu gccacgacgg caucucccgc auguccaucu gcauguccgg ccccaacaac 600

aacgccuccg ccgucgucug guacggcggc cgccccguca ccgagauccc cuccugggcc 660

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ggcaagaucc agaagaucga ggagcucgag ggcaacgccc agcacaucga ggagugcucc 840

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cgccccguca ucaucaucga ccccgagaug augacccaca ccuccaagua ccucugcucc 960

cgcguccuca ccgacaccuc ccgccccaac gaccccaucu ccggcaacug cgacgccccc 1020

aucaccggcg gcucccccga ccccggcguc aagggcuucg ccuuccucga cggcgagaac 1080

uccuggcucg gccgcaccau cuccaaggac ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccg agaccgacac ccaguccggc cccaccuccc accaggucau cgucaacaac 1200

cagaacuggu ccggcuacuc cggcgccuuc aucgacuacu gggccaacaa ggagugcuuc 1260

aaccccugcu ucuacgucga gcucauccgc ggccgcccca aggaguccuc cguccucugg 1320

accuccaacu ccaucgucgc ccucugcggc uccaaggagc gccucggcuc cugguccugg 1380

cacgacggcg ccgagaucau cuacuucaag uga 1413

<210> 119662
<211> 1416
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81864

<400> 119662
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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccauc 180

gucgagaaca ccuacgucaa caacaccacc aucaucucca aggagaccga gcucaagccc 240

cccaacuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

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cccaucaucg agaucgacau gaacacccuc gagcacaccu cccgcuacgu cugcaccggc 960

auccucaccg acaccucccg ccccggcgac aaguccuccg gcgacugcuc caaccccauc 1020

accggcuccc ccggcgcccc cggcgucaag ggcuucggcu uccucaacgg cgacaacacc 1080

uggcucggcc gcaccaucuc ccccaagucc cgcuccggcu ucgagaugcu caagaucccc 1140

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aacugguccg gcuacuccgg cuccuucauc gacuacuggg acaacgacuc cgagugcuac 1260

aaccccugcu ucuacgucga gcucauccgc ggccgccccg aggaggccaa guacgucugg 1320

uggaccucca acucccucau cgcccucugc ggcucccccu uccccgucgg cuccggcucc 1380

uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

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<211> 1416
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81865

<400> 119663
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aaccuccuca ucggccucuc caacgucggc cucaacgucu cccuccaccu caaggagacc 120

ggccccaagc aggagggcaa ccucaccugc augaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga guccgagacc 240

cccaacuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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gccaccgcca ccgucuacua caaccgccgc cucaccacca ccaucaagac cugggcccgc 660

aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc cacaccaagg ucauguacuu ccacaagggc 780

cucgucguca aggaggaggc ccucaagggc uccgcccgcc acaucgagga gugcuccugc 840

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cccaucaucg agaucgacau gaacacccuc gagcacaccu cccgcuacgu cugcaccggc 960

auccucaccg acaccucccg ccccggcgac aagcccaccg gcgacugcuc caaccccauc 1020

accggcuccc ccggcgcccc cggcgucaag ggcuucggcu uccucaacgg cggcaacacc 1080

uggcucggcc gcaccaucuc cccccgcucc cgcuccggcu ucgagaugcu caagaucccc 1140

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aaccccugcu ucuacgucga gcucauccgc ggccgccccg aggaggccaa guacgucugg 1320

uggaccucca acucccucau cgcccucugc ggcucccccu uccccgucgg cuccggcucc 1380

uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

<210> 119664
<211> 1416
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81868

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga gcucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

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aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

ucccucggca cccccccccac caucuccaac uccgacuuca ugugcgucgg cugguccucc 540

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gccaccgcca ccgucuacua caaccgccgc cucaccacca ccaucaagac cugggcccgc 660

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81869

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ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccauc 180

gucgagaaca ccuacgucaa caacaccacc aucaucucca aggagaccga gcucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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accaccugcc acgacggcau cggccgcaug accaucugca uccagggcaa caacgacaac 600

gccaccgcca ccgucuacua caaccgccgc cucaccacca ccauccgcac cugggcccgc 660

aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc uacaccaagg ucauguacuu ccacaagggc 780

cucgucauca aggaggaggc ccucaagggc uccgcccgcc acaucgagga gugcuccugc 840

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<210> 119666
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<212> RNA
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neuraminidase__InfluenzaA__AGQ81870

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccauc 180

gucgagaaca ccuacgucaa caacaccacc aucaucucca aggagaccga gcucaagccc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc uacaccaagg ucauguacuu ccacaagggc 780

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<210> 119667
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81871

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccauc 180

gucgagaaca ccuacgucaa caacaccacc aucaucucca aggagaccga gcucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

augaccgacg gcuccgccuc cucccaggcc uacaccaagg ucauguacuu ccacaagggc 780

cucgucauca aggaggaggc ccucaagggc uccgcccgcc acaucgagga gugcuccugc 840

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

<210> 119668
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81872

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccauc 180

gucgagaaca ccuacgucaa caacaccacc aucaucucca aggagaccga gcucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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<210> 119669
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<212> RNA
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<220>
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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc augaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga gcucgagacc 240

cccuccuacc uccuccucaa caagggccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagacc gagcagauca ucgucacccg cgagcccuac 360

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 720

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1416

<210> 119670
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<220>
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neuraminidase__InfluenzaA__AGQ81876

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aaccuccuca ucggcaucuc caacgucggc cucaacgucu cccuccaccu caaggagaag 120

ggccccaagc aggaggagaa cuccaccugc augaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga gcucgagacc 240

cccuccuacc uccuccucaa caagggccuc ugcaacgucg agggcugggu cgucaucgcc 300

aaggacaacg ccguccgcuu cggcgagacc gagcagauca ucgucacccg cgagcccuac 360

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neuraminidase__InfluenzaA__AGQ81877

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ggccccaagc aggaggagaa cuccaccugc accaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga gcucaagacc 240

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 300

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81878

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ggccccaagc aggaggagaa ccucaccugc accaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga ccucaaggcc 240

cccuccuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 300

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<220>
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neuraminidase__InfluenzaA__AGQ81882

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aaggacaacg ccauccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

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gucuccugcg accccaccgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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aaccccugcu ucuacgucga gcucauccgc ggccgccccg aggaggccaa guacgucugg 1260

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neuraminidase__InfluenzaA__AGQ81914

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cccuccuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 240

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accaccugcc acgacggcau cggccgcaug accaucugca uccagggcaa caacgacaac 540

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<210> 119705
<211> 1416
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ggccccaagc aggaggagaa ccucaccugc augaccauca accagaacaa caccaccguc 180

gucgagaaca ccuacgucaa caacaccacc aucaucacca aggagaccga gcucgagacc 240

cccaacuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucgucgcc 300

aaggacaacg ccguccgcuu cggcgagucc gagcagauca ucgucacccg cgagcccuac 360

gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 420

aacaagcacu ccaacggcac cauccacgac cgcaccgccu uccgcggccu caucuccacc 480

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gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 360

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 660

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119708
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<212> RNA
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<220>
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gccaccgcca ccgucuacua caaccgccgc cucaccacca ccaucaagac cugggcccgc 600

aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 660

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

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gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 360

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

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<210> 119711
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<210> 119712
<211> 1356
<212> RNA
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<220>
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ggccccaagc aggaggagaa ccucaccugc augaccacca aggagaccga gcucggcacc 180

cccuccuacc uccuccucaa caagucccuc ugcaacgucg agggcugggu cgucaucgcc 240

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aacauccucc gcacccagga guccgagugc gucugccaca acggcaccug cgccgucguc 660

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gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 360

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<210> 119715
<211> 1356
<212> RNA
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<220>
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<210> 119716
<211> 1356
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81928

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ccccucggca cccccccccac cgucuccaac uccgacuuca ucugcgucgg cugguccucc 480

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119717
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<212> RNA
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neuraminidase__InfluenzaA__AGQ81929

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119718
<211> 1413
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neuraminidase__InfluenzaA__AGQ81930

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gacaacggca uccgcaucgg cucccgcggc cacgucuucg ucauccgcga gcccuucguc 360

uccugcuccc ccaccgagug ccgcaccuuc uuccucaccc agggcucccu ccucaacgac 420

aagcacucca acggcaccgu caaggaccgc ucccccuucc gcacccucau guccgucgag 480

gucggccagu cccccaacgu cuaccaggcc cgcuucgagg ccgucgccug guccgccacc 540

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auccuccgca cccaggaguc cuccugcacc ugcauccagg gcaacugcua cugggucaug 720

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gccauccucc ccuucgacau cgacaagaug uga 1413

<210> 119719
<211> 1413
<212> RNA
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neuraminidase__InfluenzaA__AGQ81931

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aagaucaccc aguggcacaa caccaacauc aucgaguaca ucgagaagcc cgagaacgac 240

cucuucauga acaacaccgg cccccucugc gacgccaagg gcuucgcccc cuucuccaag 300

gacaacggca uccgcaucgg cuccaagggc cacgucuucg ucauccgcga gcccuucguc 360

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gucgccgucg uccacuacgg cggcaucccc accgacguca ucaacuccug ggccggcgac 660

auccuccgca cccaggaguc cuccugcacc ugcauccagg gcgagugcua cugggucaug 720

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<210> 119720
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<212> RNA
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<220>
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aagcacucca acggcaccgu caaggaccgc ucccccuucc gcacccucau guccgucgag 480

gucggccagu cccccaacgu cuaccaggcc cgcuucgagg ccgucgccug guccgccacc 540

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gucgccgucg uccacuacgg cggcgucccc accgacgucg ucaacuccug ggccggcgac 660

auccuccgca cccaggaguc cuccugcacc ugcauccagg gcaacugcua cugggucaug 720

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<210> 119721
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ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119722
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81935

<400> 119722
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119723
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81936

<400> 119723
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119724
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81937

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119725
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81938

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119726
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81939

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

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gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119727
<211> 1413
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGQ81940

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccuccaagg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

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gagggcaaga uccucaagug ggagucccuc gccggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acaucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119728
<211> 1413
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81941

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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

cccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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gagggcaaga uccucaagug ggagucccuc accggcaccg cccgccacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

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accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119729
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81942

<400> 119729
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cauccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119730
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81943

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

accucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccau ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acaucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119731
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ81944

<400> 119731
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

uccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119732
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81947

<400> 119732
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcu ccuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccau ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119733
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81948

<400> 119733
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

accucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccau ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acaucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgagugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119734
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81951

<400> 119734
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccaguccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcgucua cuacuuccgc 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119735
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81952

<400> 119735
augaacccca accagaagau ccucugcacc uccgccaccg ccaucgucau cggcaccauc 60

gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcgucua cuacuuccgc 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119736
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81954

<400> 119736
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcgucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119737
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81956

<400> 119737
augaacccca accagaagau ccucugcacc uccgccaccg ccaucgucau cggcaccauc 60

gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

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gagggcaaga uccucaagug ggaguccccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119738
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from

neuraminidase__InfluenzaA__AGQ81957

<400> 119738
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaucau caucaacaac 180

uacuacaacg agaccaacau cacccagguc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

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gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccguccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119739
<211> 1413

<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81958

<400> 119739
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

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uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119740
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81959

<400> 119740
augaacccca accagaagau ccucugcacc uccgccaccg ccaucgucau cggcaccauc 60

gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

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cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggccgca uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccgcau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119741
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81960

<400> 119741
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccaac 120

ugcaacugcu cccgcuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg acuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc caacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cgagaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119742
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81961

<400> 119742
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccaguccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcgucua cuacuuccgc 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

uccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119743
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81962

<400> 119743
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccaguccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcgucua cuacuuccgc 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119744
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81963

<400> 119744
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggag accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc caacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcauguccg ucugcaucuc cggccccaac 600

gacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgcccaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca gugggacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119745
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81964

<400> 119745
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccaa gcccgaggag accaacgccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

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gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccac cuccaccacc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119746
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81966

<400> 119746
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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

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gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119747
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81967

<400> 119747
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacgccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

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gagggcaaga uccucaagug ggaguccccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaucau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119748
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81968

<400> 119748
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggcc accaacgccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acauccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cucccucauc 480

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc aucgacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119749
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGQ81969

<400> 119749

augaacccca accagaagau ccucugcacc uccgccaccg ccaucgucau cggcaucauc 60

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uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

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uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgucaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaucau cguccucaac 1200

accgacuggu ccggcuacuc cggcuccuuc auggacuacu gggccgaggg cgacugcuac 1260

cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119750

<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81970

<400> 119750
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgaggag accaacgccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac aagcgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagccccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acgucggcaa gugcaacgac 1020

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accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

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cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119751
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<220>
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neuraminidase__InfluenzaA__AGQ81971

<400> 119751
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

accucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacuccuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acaucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119752
<211> 1413
<212> RNA
<213> Artificial Sequence

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<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81972

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

uccugcuacg gcgagcgcac cggcaucacc ugcaccugcc gcgacaacug gcagggcucc 900

aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

ucccccgucc ucaccgacaa cccccgcccc aacgacccca acaucggcaa gugcaacgac 1020

cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81973

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccucc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

accucccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gaguccuccg acguccucgu cacccgcgag 360

cccuacgucu ccugcgaccc cgacgagugc cgcuucuacg cccucuccca gggcaccacc 420

auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

uccuggcccc ucuccucccc ccccaccguc uacaacuccc gcgucgagug caucggcugg 540

uccuccaccu ccugccacga cggcaagucc cgcaugucca ucugcaucuc cggccccaac 600

aacaacgccu ccgccgucgu cugguacaac cgccgccccg ucgccgagau caacaccugg 660

gcccgcaaca uccuccgcac ccaggagucc gagugcgucu gccacaacgg cgucugcccc 720

gucgucuuca ccgacggcuc cgccaccggc cccgccgaca cccgcaucua cuacuucaag 780

gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

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cccuaccccg gcaacaacaa caacggcguc aagggcuucu ccuaccucga cggcgccaac 1080

accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119754
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGQ81974

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gccguccuca ucggcgucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccaguccca gcccgaggcc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau cacccagauc uccaacacca acauccagau ggaggagcgc 240

gccaaccgcg gcuucaacaa ccucaccaag ggccucugca ccaucaacuc cuggcacauc 300

uacggcaagg acaacgccgu ccgcaucggc gagaacuccg acguccucgu cacccgcgag 360

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auccgcggca agcacuccaa cggcaccauc cacgaccgcu cccaguaccg cgcccucauc 480

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gagggcaaga uccucaagug ggagucccuc accggcaccg ccaagcacau cgaggagugc 840

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aaccgccccg ucauccagau cgaccccguc gccaugaccc acaccuccca guacaucugc 960

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accuggcucg gccgcaccau cuccaccgcc ucccgcuccg gcuacgagau gcucaagguc 1140

cccaacgccc ucaccgacga ccgcuccaag cccauccagg gccagaccau cguccucaac 1200

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cgcgccugcu ucuacgucga gcucauccgc ggccgcccca aggaggacaa ggucuggugg 1320

accuccaacu ccaucgucuc caugugcucc uccaccgagu uccucggcca guggaacugg 1380

cccgacggcg ccaagaucga guacuuccuc uga 1413

<210> 119755
<211> 1398
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81975

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaaguggcu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgagaa cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

uccaacggca ccauccacga ccgcucccag uaccgcgccc ucaucuccug gccccucucc 480

uccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaugggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucauc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

gacaaccccc gccccgacga ccccaacauc ggcaagugca acgaccccua ccccggcaac 1020

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

aucgaguacu uccucuga 1398

<210> 119756
<211> 1398
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81977

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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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uccccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucauc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

aucgaguacu uccucuga 1398

<210> 119757
<211> 1398
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ81979

<400> 119757
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gccgcccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucauc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

gacaaccccc gccccgacga ccccaacauc ggcaagugca acgaccccua ccccggcaac 1020

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aucgaguacu uccucuga 1398

<210> 119758
<211> 1398
<212> RNA
<213> Artificial Sequence

<220>
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gccguccuca ucggcaucgc caaccucggc cucaacaucg gccuccaccu caagcccggc 120

ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

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ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

cacgacggca aguccccgcau guccaucugc aucuccggcc ccaacaacaa cgccuccgcc 600

gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

cgcaccggca ucaccugcac cugccgcgac aacuggcagg gcuccaaccg ccccgucauc 900

cagaucgacc ccgucgccau gacccacacc ucccaguaca ucugcucccc cguccucacc 960

gacaaccccc gccccgacga ccccaacauc ggcaagugca acgaccccua ccccggcaac 1020

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gucuccaugu gcuccuccac cgaguuccuc ggccagugga acuggcccga cggcgccaag 1380

aucgaguacu uccucuga 1398

<210> 119759
<211> 1350
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGQ88501

<400> 119759

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ggcaaccagc accagaccga gcccauccgc aacaccaacu uccucaccga gaacgccguc 180

gccuccgucg cccucuccgg caacuccucc cucugcccca uccgcggcug ggccguccac 240

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 300

uucaucuccu gcuccaaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 360

aacgacaagc acuccaacgg caccgucaag gaccgcuccc cccaccgcac ccucaugucc 420

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 480

gccuccgccu gccacgacgg caucuccugg cucaccaucg gcaucuccgg ccccgacaac 540

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 600

aacaacaucc uccgcaccca ggaguccgag ugcaccugcg ucaacggcuc cugcuucacc 660

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuucaa gaucgagaag 720

ggcaaggucg ucaaguccgu cgagcucaac gcccccaacu accacuacga ggagugcucc 780

ugcuaccccg acgccggcga gaucaucugc gucugccgcg acaacuggca cggcuccaac 840

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<210> 119760
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGR33906

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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccuggcuccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccuggcuccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucguc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

uaccccgagg uccgcugcgu cugccgcgac aacuggaagg gcuccaaccg ccccguccuc 900

uacaucaaca uggccgacua cuccgucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuucucc uccuccaacu gccgcgaccc caacaacgag 1020

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aucaacuuca ugcccaucug a 1401

<210> 119761
<211> 1401

<212> RNA
<213> Artificial Sequence

<220>
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gagugcucca accccuccaa caaccagguc augcccugcg agcccaucau caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagcgcgaga ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccccg acaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcgaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggucgacua cuccaucgag ucccgcuacg ucugcuccgg ccucgucggc 960

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<210> 119762
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGR33910

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ugcuuccuca ugcagaucgc cauccucacc accaccauga cccuccacuu caagcagaac 120

gagugcucca agcccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcuccuucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaag 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

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uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacauccgcc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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<210> 119763
<211> 1401
<212> RNA
<213> Artificial Sequence

<220>
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gagugcucca accccuccaa caaccagguc guccccugcg agcccauccu caucgagcgc 180

aacaccgucc accucaacuc caccaccauc gagaaggagg ucugccccaa ggucgccgag 240

uacaagaacu gguccaagcc ccagugccag aucaccggcu ucgcccccuu cuccaaggac 300

aacuccaucc gccucuccgc cggcggcgac aucuggguca cccgcgagcc cuacgucucc 360

ugcucccucg gcaagugcua ccaguucgcc cucggccagg gcaccacccu caagaacaac 420

cacuccaacg gcaccaccca cgaccgcacc ccccaccgca cccuccucau gaacgagcuc 480

ggcgucccu uccaccucgg caccaagcag gucugcaucg ccugguccuc cuccuccugc 540

uacgacggca aggccuggcu ccacaucugc gucaccggcg acgacaagaa cgccaccgcc 600

uccaucaucu acgacggcau gcucgucgac uccaucggcu ccugguccaa gaacauccuc 660

cgcacccagg aguccgagug cgucugcauc aacggcaccu gcgccgucgu caugaccgac 720

ggcuccgccu ccggcaaggc cgacacccgc auccucuuca uccgcgaggg caagaucauc 780

aacaucuccc cccucuccgg cuccgcccag cacgucgagg agugcuccug cuacccccgc 840

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uacaucaaca uggccgacua cuccaucgag uccuccuacg ucugcuccgg ccucgucggc 960

gacacccccc gcaacgacga cuccuccucc uccuccaacu gccgcgaccc caacaacgag 1020

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<210> 119764
<211> 1356
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGR33912

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aaccuccuca ucggccucuc caacgucggc cucaacgucu cccuccaccu caaggagacc 120

ggccccaagc aggaggagaa ccucaccugc augaccacca aggagaccga gcucggcacc 180

cccuccuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 240

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119765
<211> 1356
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR33913

<400> 119765
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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119766
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<212> RNA
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neuraminidase__InfluenzaA__AGR33915

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aaccuccuca ucggccucuc caacgucggc cucaacgucu cccuccaccu caaggagacc 120

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119767
<211> 1356
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR33916

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uuccccgacg gcgcccagau ccaguacuuc uccuga 1356

<210> 119768
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR33917

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aaccccugcu ucuacgucga gcucauccgc ggccgccccg aggaggccaa guacgucugg 1260

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cccuccuacc uccuccucaa caaguccccuc ugcaacgucg agggcugggu cgucaucgcc 240

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gucuccugcg accccaacgg cugcaagaug uacgcccucc accagggcac caccauccgc 360

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ugcaacugcu cccacuccca gcccgagacc accaacaccu cccagaccau caucaacaac 180

uacuacaacg agaccaacau caccaacauc cagauggagg agcgcaccuc ccgcaacuuc 240

aacaaccuca ccaagggccu cugcaccauc aacuccuggc acaucuacgg caaggacaac 300

gccguccgca ucggcgaguc cuccgacguc cucgucaccc gcgagcccua cgucuccugc 360

gaccccgacg agugccgcuu cuacgcccuc ucccagggca ccaccauccg cggcaagcac 420

uccaacggca ccauccacga ccgcucccag uaccgcgccc ucaucuccug gccccucucc 480

ucccccccca ccgucuacaa cucccgcguc gagugcaucg gcugguccuc caccuccugc 540

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gucgucuggu acaaccgccg ccccgucgcc gagaucaaca ccugggcccg caacauccuc 660

cgcacccagg aguccgagug cgucugccac aacggcgucu gccccgucgu cuucaccgac 720

ggcuccgcca ccggccccgc cgacacccgc aucuacuacu ucaaggaggg caagauccuc 780

aaguggagu cccucaccgg caccgccaag cacaucgagg agugcuccug cuacggcgag 840

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ggcucccaga accacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc agaccuacgu caacaucaac aacaccaacg ucgucgccgg caaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcccca uccgcggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg agaccaucaa guccuggaag 660

aagcgcaucc uccgcaccca ggaguccgag ugcgucugcg ucaacggcuc cugcuucacc 720

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

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gucuccguca agcucaccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccugguc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AGR49939

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<210> 119785
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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGR49975

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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neuraminidase__InfluenzaA__AGR50032

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AGR50088

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AGR50099

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccugguccc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ccaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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neuraminidase__InfluenzaA__AGR50154

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

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uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<212> RNA
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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccaa caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 119811
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR50243

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 119812
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR50254

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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neuraminidase__InfluenzaA__AGR50276

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccga gcaguccguc 240

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<210> 119815
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<212> RNA
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neuraminidase__InfluenzaA__AGR50287

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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<210> 119816
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<212> RNA
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<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGR50298

<400> 119816
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aaccucaucc uccagaucgg caacaccauc uccaucugga ucucccacuc cauccagccc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119817
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR50309

<400> 119817
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119818
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR50320

<400> 119818
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119819
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR50331

<400> 119819
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119820
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR50342

<400> 119820
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aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

aucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ugcuaccccg acuccuccga gaucaccugc gucugccgcg acaacuggca cggcuccaac 900

cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119821
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR50353

<400> 119821
augaacccca accagaagau caucaccauc ggcuccgucu gcaugaccau cggcauggcc 60

aaccucaucc uccagaucgg caacaucauc uccaucugga ucucccacuc cauccagcuc 120

ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

ggcaagaucg ucaaguccgu cgagaugaac gcccccaacu accacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gaguaccaga ucggcuacau cugcuccggc 960

aucuucggcg acaacccccg ccccaacgac aagaccggcu ccugcggccc cgucuccucc 1020

aacggcgcca acggcgucaa gggcuucucc uucaaguacg gcaacggcgu cuggaucggc 1080

cgcaccaagu ccaucuccuc ccgcaacggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119822
<211> 1413
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGR50364

<400> 119822
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ucccucaugc uccagaucgg cuccaucauc uccaucuggg ccucccacuc cauccagacc 120

ggcucccaga acaacaccgg caucugcaac cagcgcauca ucaccuacga gaacuccacc 180

ugggucaacc acaccuacgu caacaucaac aacaccaacg ucgucgccgg cgaggacaag 240

accuccguca cccucgccgg caacuccucc cucugcucca ucuccggcug ggccaucuac 300

accaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccaccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccgucaag gaccgcuccc ccuaccgcgc ccucaugucc 480

ugcccccucg gcgaggcccc cucccccuac aacuccaagu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caugggcugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg gcaccaucaa guccuggaag 660

aagcagaucc uccgcaccca ggaguccgag ugcgucugca ugaacggcuc cugcuucacc 720

aucaugaccg acggccccuc caacaaggcc gccuccuaca agaucuucaa gaucgagaag 780

ggcaagguca ccaaguccau cgagcucaac gcccccaacu ucuacuacga ggagugcucc 840

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cgccccuggg ucuccuucaa ccagaaccuc gacuaccaga ucggcuacau cugcuccggc 960

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cgcaccaagu ccaaccgccu ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucgu ccgcggccuc ccccgcgaga acaccaccau cuggaccucc 1320

ggcuccucca ucuccuucug cggcgucaac uccgacaccg ccaacugguc cuggcccgac 1380

ggcgccgagc uccccuucac caucgacaag uga 1413

<210> 119823
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR55170

<400> 119823
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucuc cgagaagucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119824
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR55180

<400> 119824
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119825
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR55181

<400> 119825
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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119826
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55183

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

aagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119827
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55184

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa gaaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cccaucgucg acaucaacgu caaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuucuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119828
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR55185

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa gaaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc acccgccagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc cgcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119829
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55186

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uccuccugcc acgacggcaa ggccuggcuc cacgucugcg ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucgucuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aagcaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119830
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55187

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ugcuuccuca ugcagaucgc cauccucguc accaccguca cccuccacuu caagcagcac 120

gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgaggucug guggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119831
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGR55192

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgaca ucaaccucau gcccaucuga 1410

<210> 119832
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55195

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<220>
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neuraminidase__InfluenzaA__AGR55204

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGR55218

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gaguucaacu cccccccaa caaccagguc guccucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGT18726

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119836
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<212> RNA
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neuraminidase__InfluenzaA__AGT18727

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ggcucccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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uccuccaucu ccuucugcgg cgucaacucc gacaccgucg gcugguccug gcccgacggc 1380

gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119837
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18728

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119838
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18729

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ggcucccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

accggcaccg acaacaacuu cuccaucaag caggacaucg ucggcaucaa cgaguggucc 1200

ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119839
<211> 1410

<212> RNA
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neuraminidase__InfluenzaA__AGT18730

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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ggcuacuccg gcuccuucgu ccagcacccc gagcucaccg gccucgacug cauccgcccc 1260

ugcuucuggg ucgagcucau ccgcggccgc cccaaggaga acaccaucug gaccuccggc 1320

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gccgagcucc ccuucaccau cgacaaguga 1410

<210> 119840
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18731

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacucc 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaccaagu ccaucuccuc ccgcaagggc uucgagauga ucugggaccc caacggcugg 1140

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neuraminidase__InfluenzaA__AGT18732

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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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<210> 119842
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ggcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 119843
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<212> RNA
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neuraminidase__InfluenzaA__AGT18762

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gaguucaacu cccccccaa caaccagguc acccucugcg agcccaucau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119844
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<220>
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neuraminidase__InfluenzaA__AGT18764

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ugcuucuuca ugcagaccgc cuccuucauc accaccguca cccuccacau caagcagcac 120

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cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119845
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18765

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18766

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ugccucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcagcac 120

gaguuccacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucaa gcccaucuga 1410

<210> 119847
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGT18767

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gaguuccacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau gaaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18768

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcaaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119849
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<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGT18769

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119850

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGT18770

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gaguucaacu cccccccaa caacaagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGT18771

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aaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGT18772

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGT37104

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gagugcuccu cccccccaa caaccagguc augcccugcg agcccaccau caucgagcgc 180

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cccaucgucg acaucaacau gaaggacuac uccaucgucu ccuccuacgu cugcuccggc 960

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gagugcaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cucgccgagu accgcaacug guccaagccc cagugcaaca ucaccggcuu cgcccccuuc 300

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aacaacggcc acuccaacga caccguccac gaccgcaccc ccuaccgcac ccuccucaug 480

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccaucggcuc cugguccaag 660

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cucccccuac aacucccgcu ucgaguccgu cgccuggucc 540

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaccuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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<210> 119865
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<212> RNA
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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgagguccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

aucaugaccg acggccccuc cgacggccag gccuccuaca agaucuuccg caucgagaag 780

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gccgagcucc ccuucaccau cgacaaguga 1410

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc aucuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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neuraminidase__InfluenzaA__AGU92890

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

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aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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gucuccguca aguucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

gucaugaccg acggccccuc caacggccag gccuccuaca agaucuuccg caucgagaag 780

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

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uccaaggaca acuccguccg cgucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

ugccccaucg gcgaggcccc cuccccccuac aacucccgcu ucgaguccgu cgccuggucc 540

gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

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gucauccgcg agcccuucau cuccugcucc caccucgagu gccgcaccuu cuuccucacc 360

cagggcgccc uccucaacga caagcacucc aacggcaccg ucaaggaccg cuccccccuac 420

cgcgcccuca uguccugccc cgucggcgag gcccccuccc ccuacaacuc ccgcuucgag 480

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gacugcaugc gccccugcuu cugggucgag cucauccgcg gccgccccaa ggagaagacc 1260

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ggcaaccaga accagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gccuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

aacgacaagc acuccaacgg caccaucaag gaccgcuccc ccuaccgcac ccucaugucc 480

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gccuccgccu gccacgacgg caucaacugg cucaccaucg gcaucuccgg ccccgacaac 600

ggcgccgucg ccguccucaa guacaacggc aucaucaccg acaccaucaa guccuggcgc 660

aacaacaucc uccgcaccca ggaguccgag ugcgccugcg ucaacggcuc cugcuucacc 720

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

ugggucaacc agaccuacgu caacaucucc aacaccaacu ucgccgccgg ccaguccguc 240

gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

uccaaggaca acuccauccg caucggcucc aagggcgacg ucuucgucau ccgcgagccc 360

uucaucuccu gcucccccu cgagugccgc accuucuucc ucacccaggg cgcccuccuc 420

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cgcaaccagu cccagaucga gaccugcaac caguccguca ucaccuacga gaacaacacc 180

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gucuccguca agcucgccgg caacuccucc cucugccccg ucuccggcug ggccaucuac 300

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGV99052

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119895
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGV99100

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119896
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGV99112

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119897
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<220>
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neuraminidase__InfluenzaA__AGV99124

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGV99136

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119899
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGV99148

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGV99160

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AGV99172

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119902
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGV99196

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu ccccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119903
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGV99208

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119904
<211> 1410
<212> RNA

<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGV99959

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119905
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neuraminidase__InfluenzaA__AGW00005

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119906
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00068

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGW00080

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119908
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00104

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00116

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gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119910
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<220>
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neuraminidase__InfluenzaA__AGW00128

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gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgacc ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00140

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119912
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00152

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119913
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00164

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGW00176

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119915
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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGW00188

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119916
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00712

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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<212> RNA
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neuraminidase__InfluenzaA__AGW00724

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00736

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gaguucaacu cccccccaa caaccagaug augcucugcg agcccaccau caucgagcgc 180

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119919
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00748

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119921
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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00784

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00796

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00808

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW00820

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119925
<211> 1410
<212> RNA
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<220>

<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGW00832

<400> 119925

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119926

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neuraminidase__InfluenzaA__AGW00844

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gaguucaacu ucccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119927
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00868

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<210> 119928
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neuraminidase__InfluenzaA__AGW00880

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119929
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00892

<400> 119929
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacc cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119930
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00904

<400> 119930
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcggccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaugc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119931
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00916

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacaugc acuccaacaa caccgucugc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119932
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW00934

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcguccccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acacccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119933
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01247

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaaggac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01259

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119935
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01298

<400> 119935

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

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aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119936
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from neuraminidase__InfluenzaA__AGW01322

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119937
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01334

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggagg ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119938
<211> 1410
<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01346

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccaccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
<213> Artificial Sequence

<220>
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neuraminidase__InfluenzaA__AGW01382

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA
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neuraminidase__InfluenzaA__AGW01394

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gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gacauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGW01406

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcgaca ucaccggcuu cgcccccuuc 300

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<220>
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neuraminidase__InfluenzaA__AGW01418

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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neuraminidase__InfluenzaA__AGW01430

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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<220>
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neuraminidase__InfluenzaA__AGW01442

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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neuraminidase__InfluenzaA__AGW01454

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

gagggcuggu ccaaccccaa guccaagcuc cagaucaacc gccaggucau cgucgaccgc 1200

ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119948
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW01466

<400> 119948
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119949
<211> 1410
<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW01478

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119950
<211> 1410
<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01490

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119951
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01538

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119952
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01562

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119953
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01574

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW01586

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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<212> RNA
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<220>
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neuraminidase__InfluenzaA__AGW01598

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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<220>
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neuraminidase__InfluenzaA__AGW01610

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gaguucgacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGW01622

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

augaccgacg gcuccgccuc cggcaaggcc gacaccaaga uccucuucau cgaggagggc 780

aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<212> RNA

<213> Artificial Sequence

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360

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aacaacgucc acuccaacaa caccguccgc gaccgcaccc ccuaccgcac ccuccucaug 480

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cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119959
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<212> RNA
<213> Artificial Sequence

<220>
<223> derived and/or modified CDS sequence (opt2) from
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ugcuucuuca ugcagaucgc cauccucauc accaccguca cccuccacuu caagcaguac 120

gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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aacgagcucg gcgucccuu ccaccucggc accaagcagg ucugcaucgc cugguccucc 540

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gccaccgccu ccuucaucua caacggccgc cucgucgacu ccgucgucuc cugguccaag 660

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aagaucgucc acaccuccac ccucuccggc uccgcccagc acgucgagga gugcuccugc 840

uacccccgcu accccggcgu ccgcugcguc ugccgcgaca acuggaaggg cuccaaccgc 900

cccaucgucg acaucaacau caaggaccac uccaucgucu ccuccuacgu cugcuccggc 960

cucgucggcg acaccccccg caagaacgac uccuccuccu ccucccacug ccucgacccc 1020

aacaacgagg agggcggcca cggcgucaag ggcugggccu ucgacgacgg caacgacguc 1080

uggaugggcc gcaccaucaa cgagaccucc cgccucggcu acgagaccuu caaggucauc 1140

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

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neuraminidase__InfluenzaA__AGW01670

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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uccuccugcc acgacggcaa ggccuggcuc cacgucugca ucaccggcga cgacaagaac 600

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

ggcgccgacc ucaaccucau gcccaucuga 1410

<210> 119961
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<212> RNA
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<220>
<223> derived and/or modified CDS sequence (opt2) from
neuraminidase__InfluenzaA__AGW01682

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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gagauccucc gcacccagga guccgagugc gucugcauca acggcaccug caccgucguc 720

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

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aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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<220>
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neuraminidase__InfluenzaA__AGW01704

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

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uacgucuccu gcgaccccga caagugcuac caguucgccc ucggccaggg caccacccuc 420

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

aacuccaucg ucgucuucug cggcaccucc ggcaccuacg gcaccggcuc cuggcccgac 1380

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neuraminidase__InfluenzaA__AGW01716

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gccgcuccug caucaaccgc 1260

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neuraminidase__InfluenzaA__AGW01728

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

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ggcgaccgcu ccggcuacuc cggcaucuuc uccgucgagg gcaaguccug caucaaccgc 1260

ugcuucuacg ucgagcucau ccgcggccgc aaggaggaga ccgagguccu cuggaccucc 1320

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neuraminidase__InfluenzaA__AGW01740

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gaguucaacu cccccccaa caaccagguc augcucugcg agcccaccau caucgagcgc 180

aacaucaccg agaucgucua ccucaccaac accaccaucg agaaggagau cugccccaag 240

cccgccgagu accgcaacug guccaagccc cagugcggca ucaccggcuu cgcccccuuc 300

uccaaggaca acuccauccg ccucuccgcc ggcggcgaca ucugggucac ccgcgagccc 360